approach

THE NAVAL
AVIATION
SAFETY
REVIEW

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LETTERS

APPROACH welcomes letters from its readers. All letters should be signed though names will be withheld on request. Address: APPROACH Editor, U. S. Naval Aviation Safety Center, NAS Norfolk, Va. Views expressed are those of the writers and do not imply endorsement by the U.S. Naval Aviation Safety Center.

Would Have Sex

Sir:

This squadron has just recieved your first edition of "Flyboy" and think it is a great idea. We look forward to its becoming a monthly publication, budget permitting.

Safety is an ever-present problem as we all know, however putting it across in an appetizing and readable manner is not always easy. We think that your idea of using the format of one of the more popular man's magazines is a step in the right direction and can be followed up to a great advantage.

We have a suggestion which we feel would add to the appeal of your magazine. Add a fold out page of a beautiful girl similar to the Playboy, "Girl of the Month", but title yours "Flyboy Safety Girl of the Month" and add an appropriate safety slogan. These pictures could be cutout and posted in squadron readyrooms, thereby accomplishing two things:

a. Enhance the beauty of the readyroom.
b. Augment the squadron safety program.

FAGU is doing this with Playboy's Girl of the Month and seems to be having quite a bit of success . . .

CDR. H. F. MC CUE
& Pilots of VF-84

FLYBOY is an "annual" type publication. When demand requires reprinting of other APPROACH *articles we plan to do this same thing*

approach

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This periodical contains the most accurate information currently available on the subject of aviation accident prevention. Contents should not be construed as regulations, orders or directives unless so stated. Material extracted from Aircraft Accident Reports, (OpNav 3750-1), Aircraft FLIGA Report (3750-10), and Anymouse (anonymous) Reports may not be construed as incriminating under Art. 31, UCMJ. Names used in accident stories are fictitious unless stated otherwise. Photo credit: Official Navy or as credited. Articles may be reprinted with prior permission.

Contributions are welcome as are comments and criticisms. Address correspondence to Director, U. S. Naval Aviation Safety Center, NAS Norfolk 11, Va.

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*again. As for the playgirl—let's face it—*APPROACH *is an official mag, printed with government funds. As such, sex within its covers could never be the real thing. Further, the kind of material you mention is already available in quantity while material like that now printed in* APPROACH *is hard to come by.—Ed*

Chopper 'FLYBOY'

Sir:

Congratulations on your 1957 "Flyboy!" It is both interesting and pertinent to promoting safety in naval aviation.

This squadron was somewhat disappointed in not seeing any articles published specifically for the benefit of all of our potential customers, some of whom we will be meeting operationally in the months to come. It is felt that the future issues of "Flyboy" should contain at least one article on helicopter operations from the rescuee's standpoint.

J. A. HARMAN
CO, HU-2

Good suggestion. While the original concept of "Flyboy" called only for material on basic aerodynamics, it may be possible for APPROACH *to get enough time, material and funds for such a rescue booklet. Suggestions for contents of such a booklet are urgently desired. (At the moment of publication it could not be determined if a Sense Pamphlet is underway or not.) Meanwhile, this issue, in accordance with the March theme in the Aviation Safety Officer's Guide, contains some material on the subject. For a listing on what is available from past issues of* APPROACH, *see July '56 and '57 issues—Ed.*

Paint Gun Bay Latches?

Sir:

At two different air stations my preflight check of a TV-2 found both gun bay doors closed with only one locked. The unlocked door was flush with the fuselage and required a close inspection to see that it was unlatched.

Due to the aerodynamic characteristics of the TV-2 with the gun bay doors open in flight, this is definitely a hazardous situation. I admit a close preflight will always uncover these discrepancies; but do we always preflight carefully?

The line crews were cautioned and the line chiefs notified. I suggest bright paint or attention-getting lettering around or on the latches.

PREFLIGHTER

Use of P2V Varicam

Dear Sir:

In reference to the letter of CDR Matton, Jr. on use of varicam during P2V landings (November Approach), I would like to include a few comments as a BuAer engineer.

The CDR indicates that 1½ to 2 degrees of varicam is satisfactory for most normal landings. The amount of varicam necessary to trim for landing is pretty much proportional to the landing center-of-gravity location. The forward C.G. recommended limit in the Weight and Balance Handbook AN 01-1B-40 is based on the use of full varicam with elevator effectiveness and stick forces still meeting reasonable stability and control requirements.

In the past, P2V aircraft with turrets installed, etc., normally would land well aft of the forward C. G. limit, therefore heavy use of the varicam was necessary. However, recent configurations and modification changes i.e., removal of turrets, MAD tail installation, etc. incur normal landings with C. G. locations forward and somewhat near the forward C. G. limits. Use of 4 to 6 degrees of varicam or more, as recommended in "Landing the P2V," then becomes necessary to achieve reasonable elevator control and effectiveness. Therefore the term "normal landing" is somewhat ambiguous since the C.G. location is considerably different for landing now than for the ex-P2V pilot landings.

Caution certainly must be exercised when using heavy varicam in event a wave-off becomes necessary since retrim is essential.

K. E. DENTEL
Weight Control Branch,
Bureau of Aeronautics

Will Trade

Sir:

"Pot of Gold" in Nov issue has hit some soft spots in the system and I hope will do some good. Mr. Binon Order has told me the same thing since June. Finally accepted an H-5 *medium* hoping to perhaps trade with some other Anymouse who has a *large*. How about running a "Will Trade" column? . . .

MAD MARINE

Aye! Anyone wanting to trade one H-5 (Med) for one H-5 (lg), soonest, contact Box B.O.O., APPROACH—*Ed.*

LETTERS

Continued

Confusing Lights

Sir:

With the ever-increasing number of lights from super highways, bridges and expanding suburbs, the ready identification of the runway from any reasonable distance is becoming continuously more difficult. It would be interesting, for example, to know how many pilots have inadvertently contemplated a landing on South Capitol Street Bridge in Washington vice NAS Anacostia . . .

Such a panorama of light is frequently frustrating — sometimes embarrassing — and, in emergencies, dangerous. A solution to this light camouflage problem would be the use of pulsating intensity runway lights. To further assist in differentiating adjacent military fields, this pulsating intensity could be coded to form a single letter of the alphabet — an identification then properly to be listed in RadFacs. Of course it would be desirable for the tower to return the lights to the normal, steady intensity when an aircraft reported base leg.

H. D. W., LCDR

"C"quence

Sir:

. . . I believe the Flight Service officer has his 4 C's [Confess, Climb, Communicate and Comply, pg 44 Oct '57 APPROACH] in the wrong order.

. . . Should be Climb, Communicate, Confess, Comply . . . The higher you are the better communications are likely to be . . . Should the pilot confess before he climbs he'll either have to repeat himself or he'll confuse the aircontrolman because the AC might not have heard his first transmission . . .

MARY ELLEN POPE, AC3
Norfolk

Altitude is important, but so is time and fuel. Pilots will have to vary the first three steps as appropriate for their flight. Incidentally, the Training Command is teaching 5 C's—the fifth is Conserve. Please see pg 1, Feb '58 APPROACH.—*Ed.*

Joe's Goof

Sirs:

I enjoyed "Merry Christmas, Joe" [Dec '57] very much and it showed you have a staff member who has a real interest in aviation. Though he is current in World War I history and apparently is familiar with current carrier types, he doesn't have the word on personal equipment.

If Joe had been equipped with a mask with the MC-3A connector he would never have taken off unless he were hooked up to the aircraft's O_2 system.

This latest connector is the only type that should be used these days—(See BuAer ACSEB No. 29-57). This connector warns a pilot if he is not hooked up by means of a valve that shuts off all air to the mask unless it is properly hooked up.

This little feature would have also eliminated the incident described in "Pennywise" on p. 15.

Of course, I will have to admit that if Joe had tried to draw a

Although the contributor of this piece of satire didn't say whether mechs or logistics were responsible for such ladder usage, mechs "aiming" the NC-5 at the airplane and leaving the foreign objects in the foreground are certainly inviting beaucoup trouble. For spotlighting these "errors" we tip our hardhat to MAJ Harry Moore, 2nd MAW. Incidentally, the part no. for the proper F4D cockpit access ladder is K5446300-503 and wing access ladder is K5552796.

mask from supply, they either wouldn't have had any at all or some with the wrong connector. There seems to be some great lack of coordination between the BuAer people and the supply system when it comes to personal equipment. For example, we fly TV-2s in the reserve program with no automatic parachutes and no auto seat belts, while the AF has been flying the same planes for at least two years with both auto chutes and belts.

From "Letters," fleet pilots seem to have the same problems—no H-5 helmets, no summer flight suits, no gloves. . . .

J. S. ALGRANTI, USNR

Beech Selectors Fix

Sir:

Your Nov 57 ["Daytime Nightmare"] story on the *Beech* running out of gas because the fuel indicator was where the fuel selector wasn't, is as old as the printing press.

I wonder why the two selectors could not be combined for checking other tanks without shifting suction . . . could be designed to be utilized only after the pilot had consciously and temporarily separated the two selectors.

R. P. EVANS, LTJG

Checklist Design

Sir:

Reference the article "Design for Damage" in your Oct '57 edition, may I add an item to your summary?

> "Item e. That improperly designed checkoff procedures are strongly involved in causing the pilot to commit errors of omission."

In explanation, take a common downwind check: gas, brakes, undercarriage, mixture. The most important item is in the middle! How many checks do you know of that were obviously made up by some plumber in a hurry?

GEORGE PUMPLE
Lieutenant, R.C.N.
ASS 881
HMCS BONAVENTURE

¿Que Pasa?

Dear Sir:

We would like to compliment you on the fine manner in which the material is always presented in your magazine . . .

. . . we noticed the "Well Done" which was printed in Spanish in a back issue of APPROACH. We also noticed the letter to the editor which commented on the translation. Since we also publish an edition of the Digest in Spanish (a back issue is enclosed) we know the same translation does not always suit every reader.

TERENCE B. DONAHUE, Editor
Lockheed Aircraft Corp., Calif.

Gracias, Amigo.—Ed.

Operational Craft for Oldtimers

Sir:

November APPROACH letter "Live 'n Learn" "youngun" blasted away at an "oldtimer" who fumbled for a switch or two in a TV-2. How about pausing a minute or two to give the oldtimer a bouquet for having guts and enthusiasm enough to fly a jet and live modern instead of getting his hundred a year in the old SNB. It is just possible that "oldtimer" stays up to his ears in shuffling papers and hurries to the flight line to get a flight. "Youngun" in all probability has the golden opportunity of spending most of his working day near or in a jet and will naturally be more familiar with it.

I am a strong advocate of boning up on the handbook before flying an unfamiliar plane. I much prefer to burn an extra 50 gallons on the end of the runway and go thru my checklist a second time before takeoff. My point is this: Let's take every opportunity to get the senior officers up in our jets. They are in the policy setting and guiding positions of naval aviation. When the oldtimers take time out to fly jets, help them; don't knock them.

As a parting blast: A few issues back, LCDR Corner put forth excellent reasons for maintaining proficiency in operational aircraft (including jets) during tours calling for proficiency flying. It still appears we are going to be strapped with the SNB for years to come. How about an enthusiastic campaign to furnish operational type aircraft for maintaining proficiency flight ability and give the cotton-picking *Beechcrafts* to the Smithsonian. It is poor economy to lose hard gained jet proficiency by being required to fly only an SNB during a three-year shore duty tour.

B. E. COLKITT, Jr., CDR
(a young "old Fud")

A bouquet to you and other seniors who maintain jet proficiency. It isn't easy to get or maintain. Perhaps "Youngun" overlooked his purpose in the TV—to assist and instruct the "oldtimer". Concur that many would like to drive something more operational than a Beech. *Meanwhile, back at the ranch, remember that the real danger in proficiency flying billets comes from 29 days at a desk and 1 day in the air. This is best described in AARs as "lack of recent experience."—Ed.*

When You Gotta Go—Go!

Sir:

The article "When You Gotta Go" in the January 1957 issue of APPROACH has gotta go. At least the statement "With the full automatic setup that includes the para-

LETTERS

Continued

chute opening device, an ejection below the barometric setting of the chute opener will have the pilot riding in his open parachute in just about 3 to 4 seconds after the face curtain has been pulled" *has gotta go.*

How about regrouping and rereading this same article, February's "Down to Earth," and May's "Auto Parachute Opener." Let's take a look at the "times" the way I see them according to these articles.

¾ seconds after curtain is pulled for shoulder harness and lap belt to release and fall clear. (When You Gotta Go)

3 seconds for auto chute device to actuate ("Down to Earth" and "Automatic Parachute Openers").

2 seconds for chute deployment ("When You Gotta Go").

5¾ seconds Total Time.

If we go back to the "When you Gotta Go" article and its time chart, you will find that experience has indicated that it takes 1 to 2 seconds to eject. I interpret this to mean, the time it takes to pull the pre-ejection handle and/or the face curtain. Do believe that this should be included in the "total time" briefings to the boys, especially for low altitude ejection. And this "experience indicated time" fails to take into consideration such things as confusion, shock, and the metal bird twisting around like a wild bronc before you grab the handle. At a minimum, the total time now is up to 6¾ to 7¾ seconds.

The reason for writing of course is that I don't agree with the printing of the 3- to 4-second business. I hope that this part of the article is not being used as a basis for pilot briefings. However, I must admit, *When You Gotta Go — You Gotta Go!* so hope that we all have sufficient "time," whatever the exact requirement is. I'll take the minimum of 6¾ seconds.

H. R. MOORE
Major USMC

Perhaps you're right. Nobody knows the full answers, because chute deployment depends on many variable factors. We suggest you see "Parachute Q," Jan. '58, and Weekly Summary 6-12 of Jan. '58. —Ed.

Over and Out!

Sirs:

I am leaving the green-clad ranks of semper fliers in a few months, but the reliving of my frightening experiences as a "new boy" in a gung-ho AD squadron is hereby retold.

After AD training at Corpus, three noteworthy months were spent at a VMAT, prior to joining my new squadron.

The problem I'm airing is or can be simple, universal and extremely dangerous to naval pilots of junior and/or irresponsible rank, mentality, or flying experience . . . experienced pilots, who should be towers of aeronautic sagacity, are unwittingly shaping the junior studs into careless and negligent folks who read APPROACH only to see if they've made the Old Pro Club. Few ever will.

The insidious malignancy endangering these fledglings is something I prefer to call the "Unprofessional Approach." Its causes and environment are discussed herein. No doubt you old grads of sundry Safety and Test Training Schools are as unconsciously aware of the necessity for a professional attitude as you are of the necessity for Per Diem, sustenance, or women. But it's so prevalent in your minds, both airborne, and desk-chained, that you probably haven't discovered it recently enough to write about in your wondrous magazine. (I've just finished the "FLYBOY," and see no such indication in the index.) I was and am the greenest of stallers, and feel quite fortunate that I have reached, unscathed, a 1000 hours in prolonged exposure to cancerus unprofessus.

The Safety and Operations Officers may master the acey-duecy board time and again, but the resulting poor supervision and lack of psychological insight on their part can have disastrous results, as I shall indicate.

In this squadron, a continuous stream of common-sense and Op-Nav violations occurred as a result of mob rule. Any five pilots is a mob. The slightest mistake, balk or deficiency in pilot technique was all the incentive such mob needed to jump and endlessly harangue some hard-striving junior pilot into near-oblivion. The ostracized rocketeer was inspired by a loss of facile pride to reinstate himself with such daring maneuvers as befit the zaniest of test pilots.

Proving that the published Vn Diagram was a lot of bosh was a pretty good starter. If the parvenu followed up with a 25′ bomb average over 16 drops (necessitating max pullouts at min altitudes, I might add), he might have come close enough to the bosom of his dubious seniors to cap his exploits with a feat of flathattus bravadus, or "Golly, gee, Skipper, I didn't know Sampan masts were 25 feet high."

The extreme of such lamentable histrionics was the boorish maneuver of one astute lad who couldn't quite roll out of the third slow roll at 200 feet (yes, two *hundred*). In a spasm of inexplicable immentality, he elected to pull through. The Board found his teeth, revolver, and receiver of one 20mm cannon.

Another lad, since appointed Fire Marshal, proved his worth by bringing a wire home with him. The remaining pilots rationalized the slow roller's fate with the knowing posthumous remonstrance that "we told him he was a lousy pilot, so he should have known he couldn't hack the third roll." Next day, one of their secondary victims attempted, and successfully completed the identical maneuver. Obviously, *HE* could hack it.

A nice academic point arises: Was Dilbertus Slowrollus wrong and guilty, and if so, how much of the blame rested with the Squadronus Hotrockee? A small cabal of aviatrus braggadocius is all that's

necessary to upset the Safety Applecart in such a grim and expeditious manner.

In the case described, a similar clique had so commanded the spread of said infliction, that even the wise old aeronauts refrained from speaking for fear of general squadron reprisal! Strangely enough, none of the responsible people were very good themselves, and usually never put *themselves* into a situation that could be described as hairy. If they believed in teamwork, it was only in managing the flight schedule to keep them from the eyes of their unwitting victims in fear of the ironical turnabout of having the skeletons in their *own* hellholes exposed.

The danger of the aforementioned is this: the new guy must associate with the younger, brasher pilots, and rarely tip scotches with the CO, Exec, or Ops Officer, and is horribly susceptible to the sorry inculcation described.

I too, was weakened by the disease, and broke many rules to 'prove myself', wising up when my best friend bent a mountain while emulating some case files and flying with a hangover. The sorry part is that all these stories are true, and only the names have been changed to protect the guilty.

So the new guy emulates previous new guys and pulls four G in the break, split S to the RDO shack, never takes a wave-off, and lives by the slogan that 'There's no approach that can't be salvaged by an S-turn in the groove'.

To ask that squadron administrative personnel study psychology and attempt to differentiate between healthy competitive ribbing and destructive admonishment is too extreme. What may have been acceptable in the world of straight, high-lift wings and quick-accelerating props is not even way below par for high-performance masters of the engineers' minds.

I worked in Operations, shuffled papers, wrote AARs, and inventoried personal effects until I finally realized that the 'weak-spined' Major with 3500 hours, 8 Air Medals, and two Purple Hearts wasn't so weak after all. He was just one heck of a lot more savvy than a lot of wet-eared phonies who certainly never cultivated the panacea for habitually short-lived type pilot's ills:

The professional approach.

INITIATED

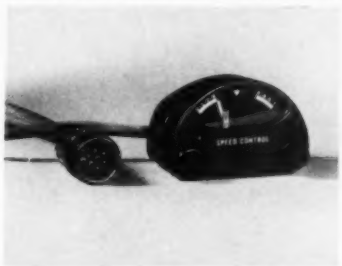
Please see page 22 and 23.—Ed.

Speed Control Test

Sir:

Your special report on the mirror landing system (April 1957) was very informative and most interesting.

It was with particular interest that we read the section on the remaining problems with the mirror system, which seem to revolve around the fact that although the mirror establishes the best possible path of descent, the lack of attention to the LSO has made the control of speed during the approach less precise and, at times, critical.



In Canada, the Royal Canadian Navy has met the problem of proper approach speed in conjunction with the mirror system by specifying our SPEED CONTROL System for all operational carrier aircraft. (S2F, F2H, etc.) This precision wing lift measurement equipment gives the RCN pilot an optimum approach speed for all gross weights with all configurations and under all conditions.

The basic SPEED CONTROL System is installed already in the S2F's and the AD series aircraft of the United States Navy, but only the precision stall warning function of the system is utilized at present (stick shaker).

To solve the mirror approach speed problem of these aircraft is just a matter of installing the inexpensive SPEED CONTROL indicator above the panel in either plane to place the basic speed safety indication and trend in the pilot's periphery of vision as he watches the meatball in the mirror. The answer to what you call the "major consideration" is really as simple as that.

ALLEN B. HEINSOHN
Safe Flight Instrument Corp.

A fleet S2F squadron has completed a two-cruise evaluation of your system, plus the three-lamp exterior approach lights for the LSO. Reaction of the squadron pilots, LSO and NASC is most favorable and the report has gone forward to BuAer. Of particular interest was the system's maintenance-free reliability and simplicity. The liftmeter, presently in use in many civilian and some USAF aircraft, is now installed in several A3Ds.

It appears obvious that the adoption of this liftmeter in S2F aircraft (and in other carrier aircraft as well) would provide more accurate speed control and LSO-pilot coordination, and thereby increase the Navy's ability to operate effectively and safely from a flight deck. The liftmeter can also, of course, be used for more accurate speed control on beach landings, with or without mirror.

The importance of speed control is emphasized by the record. Last calendar year the Navy had 333 pilot-caused major landing accidents. Of the landing accidents, 99, or nearly a third, were stall/spin type—strictly speed control busts. —Ed.

This is a *hypothetical* case in which a Plane Captain is made party to a Court of Inquiry for suspected 'breach of assigned duties.' It's the first time a man has been tried for this offense. The case is presented and when a finding is reached this will be

A Case Of

By M/Sgt Chas. T. Perkins, Aircraft Maint. Sec., Third

The scene opens on a crowded courtroom aboard MCAS Le Orot just as the Counsel for the Court of Inquiry is questioning the first witness.

Counsel A — Q. Your name, sir?

A. Lt. Jet Pilot.

Q. Would you tell the court exactly what happened on your flight of August 15?

A. On 15 August I was assigned aircraft number 9 for gunnery practice at********range. When I preflighted the plane I found it in an extremely filthy condition but let it pass in the hope that the cleanliness didn't reflect the mechanical condition of the aircraft. Then I found a rag and loose wrench in the cockpit. Again I felt that the flight was more important than these small technicalities. I took the plane and got her off the ground and over the gunnery range. On my second pass the controls froze and I was forced to bail out.

Counsel A — Thank you, Lt. Pilot. Your witness.

Counsel B — No questions.

Counsel A — I now call Mr. Inves T. Gate to the stand.

Q. Mr. Gate, you conducted an investigation for this Court of Inquiry, did you not?

A. Yes sir.

Q. And would you tell the court what you found?

A. The crash was caused by a loose wrench in the airframe of the aircraft which had bound the flight controls. The overall blame can be laid to the excessive filth throughout the plane.

Counsel A — Thank you, Mr. Gate. Your witness.

Counsel B — No questions.

Counsel A — I would like to call three gentlemen to the stand in succession and have them explain their position in this case.

Precedence

Marine Air Wing, Air FMF Pac

Would the three gentlemen please step forward and take the stand one at a time, giving their name and attachment to this case.

First Witness — My name is B. U. Aer. One of my many jobs is to set forth instructions concerning the care of aircraft. For this task I take on many aliases one of which is NavAer 01-1A-50. Under this name I set forth all of the requirements for the procedure, frequency, materials and equipment to be used in the cleaning of aircraft. I stipulate here that cleaning of aircraft is an important function in retaining the aerodynamic efficiency and safety of aircraft. I go on to explain the reasons for the cleaning, to minimize effects of corrosion, and I tried to set the cleaning and polishing for unpainted aircraft at monthly intervals. Another nom-de-plume I use is NavAer 01-40FBA-506. With this alias I vary my middle name but basically I say the same thing. I actually force mechanics to sign a sheet of paper stating they have inspected certain important parts of the aircraft anatomy for cleanliness. Many men have come in contact with me through the name Nav Aer 07.2A. This, I felt would really spell out standards for the care of aircraft using the new white and grey color schemes. I even emphasized the importance of maintaining the white underside of the aircraft as white as possible and scrupulously clean. As 3700.3A I set forth the minimum requirements for aircraft to be ferried. Again I repeated this need for cleanliness, especially of polished surfaces.

Counsel A — Thank you, Mr. Aer. Next witness please.

Second Witness — My name is Mr. T. Note. Although, I don't have as many counterparts as Mr. Aer, I do have one that is extremely important. I go by a number, 2-56 and in here I assign the definite task of maintaining the exterior surfaces of aircraft with

Continued

A Case of Precedence

(Continued)

references as to the type compounds to use. I think I'm pretty important and not to be forgotten. Actually if more people would use me they would have less trouble with corrosion.

Counsel A — Thank you, Mr. Note. Next witness please.

Third Witness — My most well known name is Comnav AirPac, I am known by hundreds of other names and for this case I have selected a few of the more pertinent ones. The first is 00.6B. Under this name I set forth the requirements for maintenance inspections. This includes preflight, postflight, intermediate and major inspections. Actually I am embarrassed to admit that there is nothing here setting forth the requirements for cleanliness, but I require certain inspections for leaks, chafing or breaks. Indirectly, cleanliness enters here, for in order to find the discrepancy, the aircraft must be clean. As 00.8B I demand the cleanliness of an aircraft prior to acceptance. I also tell accepting units that they do not have to take the plane if it is in a filthy condition. As 00.8B I had hoped to force units to keep their aircraft in top condition. One of my best aliases is as 4730.2. Here I demand a weekly inspection of the aircraft by the pilots who fly them. I had hoped to bring pressure on the plane captains and responsibility on the pilots to keep the aircraft spotless. I tried to tie it all together by making the squadron commander responsible for the composite inspection. Reports received in my office indicate that in some remote cases, as in the one we are now hearing, 4730.2 has been laid aside as being too old to be effective. My last identity, and one which bears directly on this case, is 00.13. Here is where I set forth the unchangeable and ironclad requirements for a plane captain. I demand that each and every man assigned as a plane captain have an entry made in his SRB attesting this fact. One of these requirements is that he shall ensure cleanliness and corrosion prevention of his aircraft.

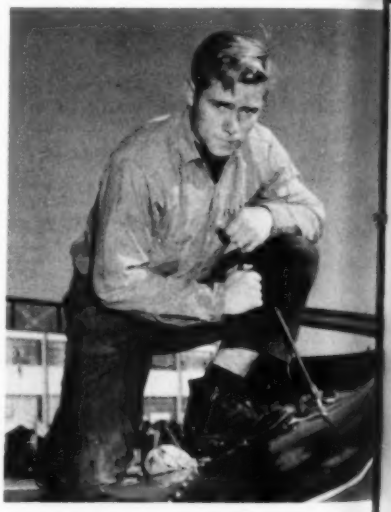
Counsel A — Thank you, Mr. Airpac. No further witnesses.

President — Does Counsel for the party have any witnesses?

Counsel B — I have one witness I would like to present. I call Captain M. Tenance to the stand.

Captain Tenance takes the oath and is seated.

Counsel B
Q. Captain, you have heard the testimony of the last three witnesses. Do you concur with and have in effect all of the programs as outlined?
A. Yes, sir.
Q. Do you know if the accused is a qualified plane captain and aware of his responsibilities as promulgated by 00.13?
A. He is an assigned plane captain and has been through 'A' school.
Q. Answer the question, Captain. Is he qualified? Is



The increase in the number of accidents in which tools and other objects are found in the wreckage is indicative that mechanics are not aware of the serious consequences of "lost tools."

there an entry in his SRB? Has he been examined for his knowledge of the aircraft?

A. I don't know! I don't know!

President — Order, order!

Counsel B — Thank you, Captain.

President — Counsel for the Court may now present his opening argument.

Counsel B — Counsel waives opening argument,

President — Counsel for the party?

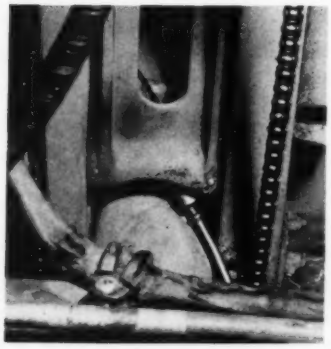
Counsel B — You have heard the evidence. PFC Mechanic is suspected of an offense leading to the crash of Lt. Pilot. On the admission of Captain Tenance he *does not know if* PFC Mechanic is qualified as a plane captain. PFC Mechanic has not been made aware of his duties and responsibilities. Does the plane captain . . . shoulder *all* of these responsibilities or are there others equally responsible? The entire defense rests on the testimony of Captain Tenance, the squadron maintenance Officer and in turn on Col. C. O. Mander, squadron commanding officer. PFC Mechanic was assigned to a job not in keeping with his qualifications. A man cannot be made responsible for a job that he has no knowledge of and has never been briefed on.

President — Counsel A, present your closing argument.

Counsel A — The Court has heard the case of PFC Mechanic. In accepting the job as plane captain he assumed the responsibilities of one. Although he may not have been informed of his mission and task, he should have been interested enough to have obtained this information on his own. The squadron comanding officer cannot be made responsible for the mistakes and errors created by his personnel. This was the job assigned to the mechanic and as such he must be brought to answer for his errors. I demand he be brought to trial for dereliction of duty.

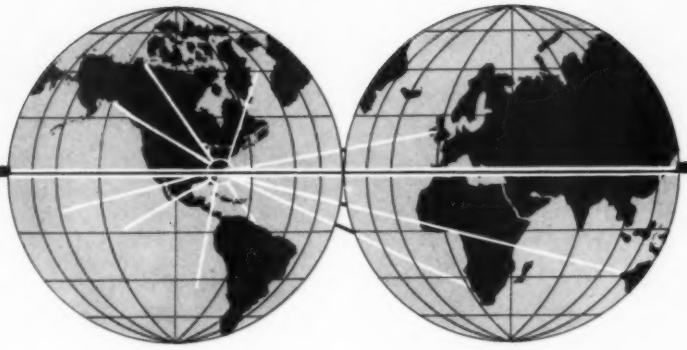
President — The court will be cleared.
Gentlemen of the court, you have heard the evidence in this case. Before we arrive at our findings, I must remind you that *authority* can be delegated but *not* responsibility. I must remind you to weigh the evidence carefully. This marks the first time that a man has been tried for this breach of assigned duties, and our decision could be the yardstick for all similar cases in the future.

An airplane which has been in the hangar for maintenance should be given a thorough preflight. Although mechanics are careful fellows every now and then a slip-up occurs and a screwdriver, wrench, or other tool may be left in the aircraft and possibly jam the flight controls.



The entire proceeding reported here is fictitious; based on an article by the Third MAW, FMF Pac. The court procedure was necessarily streamlined for brevity. Note that this was NOT a court-martial nor an Aircraft Accident Investigation Board, but a Court of Inquiry. It was "convened" to inquire into the circumstances of an accident in which negligence or inefficiency was suspected. The AAR of Lt. Jet Pilot's accident is considered a privileged document, restricted to use for the furtherance of naval aviation safety only and could not be used as the basis for legal proceedings. Readers interested in the legal ramifications of such a situation are referred to OpNavInst. 3750.6B, Part VII, para. C and D.—Ed.

MONITOR



Use of Guard

Recently, when guard frequencies were monitored over a 72-hour period, it was disclosed that less than 12 percent of the transmissions were emergency in nature. *Stay off guard channel unless you need it,* you may block out a bona fide emergency.—*MCAS Quantico*

Identical Side Numbers

It was stated that squadrons transitioning into new aircraft while maintaining other aircraft often have identical side numbers on both types. NAS Moffett reported confusion due to the aircraft being airborne simultaneously.—*Fleet Air Alameda*

Curiosity Seekers

A recent incident involving a wheels-up landing indicates that many curiosity seekers are using the taxiway to approach the scene of an accident. In this case, a jet reported over the field critically short of fuel and was cleared to land on the taxiway due to runway being fouled by a wheels-up landing. As the jet approached for his final, the taxiway was cluttered with two NC-5s, fire trucks, a tractor and several assorted vehicles, setting the stage for what could have been a serious accident. In this case the jet was requested to extend his final, the runway was cleared, and he landed safely no thanks due the unauthorized vehicles on the taxiway. It was requested that when non-emergency personnel are required to be present at the scene of an accident they utilize as few vehicles as possible and obey all regulations relative to automobiles in aircraft areas.—*Iwakuni Area*

Maintenance Under Pressure

It was brought to the attention of committee members that eager pilots are at times prone to harass mechanics into hurried work. A rate of speed commensurate with *safe* practices is desirable. It is understandable that operations must be stepped up occasionally but it is well to remember that *undue* pressures often produce disastrous results.—*1 MAW*

Emphasis on Doctrine

The use of protective equipment commented on at length in this report had no direct bearing on the accident but did reflect a disregard for flight safety on the part of the pilot. The proper use of protective equipment within this squadron is mandatory and any deviation from our prescribed doctrine will not be tolerated—*1st MAW Area*

EXCERPTS FROM SOME OF THE NAVY'S SAFETY COUNCILS THROUGHOUT THE WORLD, WHO PROVIDE LOCAL LEADERSHIP AND EMPHASIS TO THE NAVAL AVIATION SAFETY PROGRAM.

Foreign Object Plan

Highly visible refuse cans which should be well anchored in the flight line area will stimulate individual effort to pick up foreign objects.—*Accident Prevention, Minneapolis*

Jet Pilot Selection

The problem of proper pilot selection for jet aircraft was discussed. Several unusual cases of inadequate pilots were presented. A good number of these cases seems to be the result of improper motivation. It is more efficient for the various training commands to weed out these pilots than to expect the fleet flight surgeons to do so. The need for a standard performance card on each pilot was emphasized. —*Jacksonville*

Long and Short Requests

The procedure of tower operators requesting aircraft to land long or short in order to expedite traffic was not considered safe. The air station representative stated he would take steps to ensure that requests of this type would be limited to situations requiring such and the pilot would be advised of the reason if practicable.—*MAG-13*

Lookout-Pilot Communications

It has been found that lookouts on training flights are not properly checked out with their responsibilities. Many lookouts do not understand the clock system of position warning and communications between lookouts and pilots are not adequate. The board recommends that the Maintenance department initiate a more rigid training program in regards to lookouts on training flights. The board also recommends that the Electronics Division furnish a more adequate system of communication between lookouts and pilots.—*ComFLagWingLant/Contl.*

Conferences—

How much aviation safety could be presented and stressed to pilots and maintenance personnel without becoming monotonous and boring? No clear cut answer was forthcoming. It was stated, however, that aviation safety was not a subject or procedure in itself but encompassed sound operating doctrine. Where possible, *talks or lectures should not be presented as aviation safety* but as information for increased operational efficiency.—*MAG-31*

. . . . . Are We Near the BREAKING P

Judging by the number of replies APPROACH received to it's December 1957 article of the same name, the answer is Yes! Answers and recommended solutions have come in from all points between New River and New Delhi.

Here's what sort of thinking is taking place on the subject:

Even before the days of high-performance takeoffs a division break over the runway could be hazardous, according to one contributor. He writes of the pattern they used at Bougainville in early 1944, which was made necessary by the proximity of enemy snipers who expended much ammunition on divisions coming up for the break. They broke out over the water, and kept the final pretty short too (Illus. "A").

An anonymous reader from Pt. Mugu suggests that takeoff traffic make an immediate right turn of about 30 degrees when left-hand traffic is in use. This would have to take into consideration such things as populated areas of course, and a runway with right-hand approach would require a left turn after takeoff.

A similar suggestion was that divisions or sections should make their break on a heading 30 degrees to the left of the duty runway after crossing the downwind end.

A FAWTULant pilot contributed several thoughts: First was to have a division break over some geographic point about ten miles from the field so each individual plane can break over the numbers. He also suggested that perhaps the division could break well downwind from the duty runway and 1000′ above initial approach altitude, losing the 1000′ in the first 360 and each individual breaking over the numbers as mentioned earlier (Illus. "B").

A VF lieutenant also made the suggestion that takeoff traffic turn 30 degrees away from the breaking divisions. He also indicated that the scheme proposed in the APPROACH article might not work on *Forrestal* class carriers as their racetrack pattern is greatly extended ahead of the ship to accomodate the arresting gear return. The lieutenant also seemed concerned that the discussion in the article stressed airfields rather than carriers. True, the problem does exist afloat and an ideal solution would be one which is equally applicable afloat or ashore. However, the airfields face the problem of considering population and restricted areas and, in addition, the carriers don't as often face the problem of launching at the same time that recoveries are taking place.

A somewhat different solution proposed that divisions come *across* the downwind end of the runway at 2000′, with the leader breaking right over the numbers and turning 180 degrees upwind. After crossing the upwind end of the runway at, say 1500′, aircraft turn downwind and descend to 1000′, passing under any following traffic (Illus. "C").

Another reader believes that crosswind takeoffs might alleviate the problem in the majority of cases, excluding early fam flights, max loads and high temps. He points out that high density commercial airports have been using out-of-the-wind runways for takeoffs for years, and so has NAS Olathe, although not for the same purpose. This reader bases his recommendation on an average wind of less than 15 knots, and assuming this is correct he feels that about 90 percent of the time takeoffs could be made on an out-of-wind runway. NASC is a bit fearful that narrow treads and single-point-of-thrust might not give our high-performance jet birds the same good edge on crosswind takeoffs that *Connies* or R6Ds have.

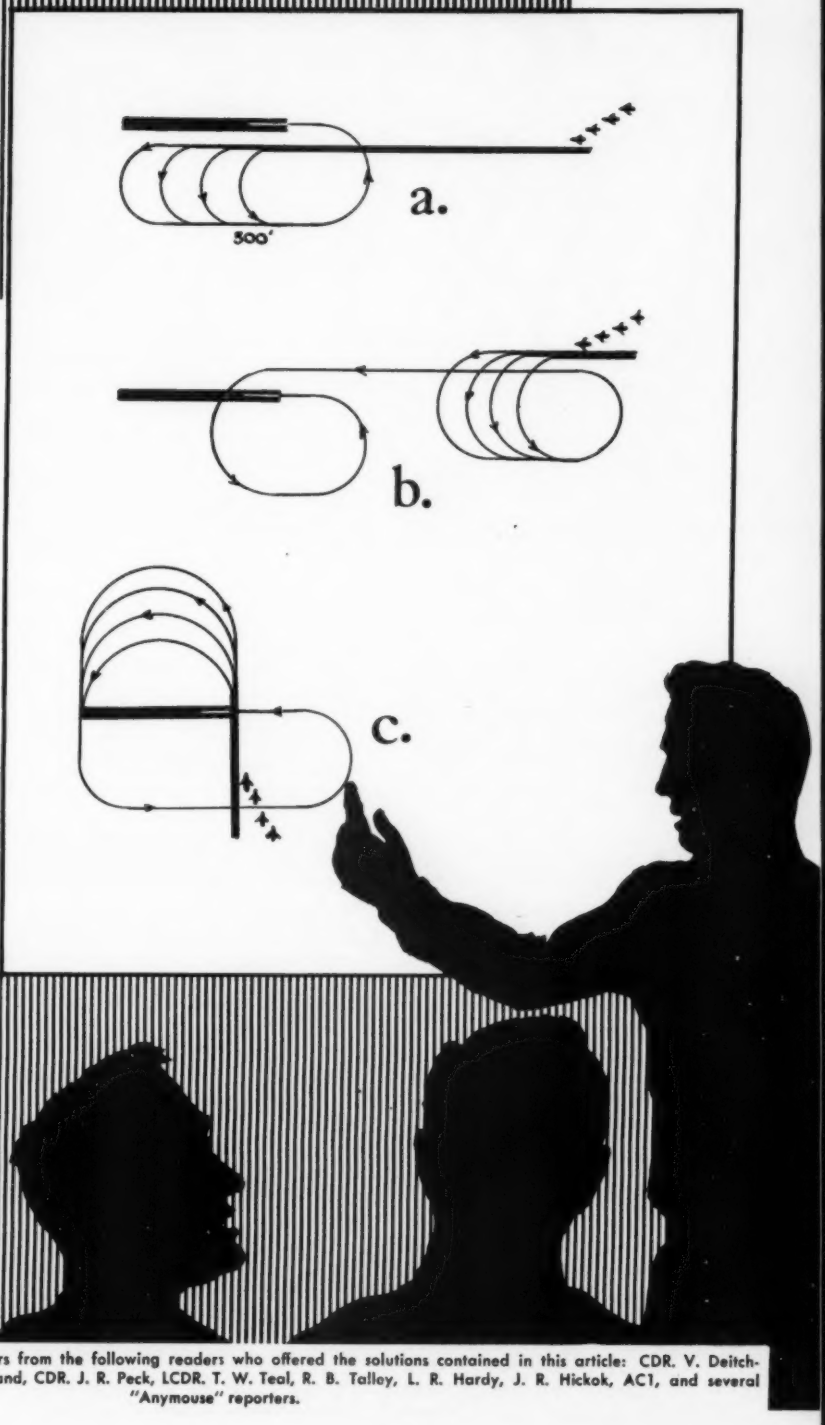
An aviation safety officer offers some constructive advance criticism of any solutions which require an "early break." He agrees that an early break could eliminate the problem of inbound traffic tangling with takeoffs, but points out an AAR in which a student was hurried into a hasty landing checkoff by an early break and apparently omitted one important detail which resulted in a fatal accident.

The ASO continues by asking . . . . "in the final analysis, are we not *all* "students," for as long as we fly?". Indeed, an experienced aviator can be rushed just as easily as a student—can we rely on his experience alone to avoid a psychological situation which a mature but inexperienced student can't overcome? He

IG POINT?

feels that inattention, diversion of attention, failure to maintain lookouts, and human fallibility are pitfalls which dictate mandatory vertical separation of arriving and departing aircraft as the only practical solution for safe separation. To this we must add that, if vertical separation is the answer, it certainly cannot diminish nor take the place of vigilant attention and lookout.

These are all the answers "Breaking Point" has received so far. No doubt more will come, and you can expect them a few issues hence. In the meantime, APPROACH wants further discussion from you on the solutions offered by readers, as well as your own solution to the basic problem. And if you get caught in a long break, look out for that *Crusader* who just started rolling —it's his first hop and he's mighty busy!



APPROACH gratefully acknowledges letters from the following readers who offered the solutions contained in this article: CDR. V. Deitchman, CDR. V. A. Dahlstrom, CDR. H. C. Rand, CDR. J. R. Peck, LCDR. T. W. Teal, R. B. Talley, L. R. Hardy, J. R. Hickok, AC1, and several "Anymouse" reporters.

Anymouse

and his hairy tales

The purpose of Anymouse Reports is to help prevent or overcome dangerous situations. They are submitted by Naval and Marine Corps aviation personnel who have had hairy or unsafe flight experiences. As the name indicates these reports need not be signed. Forms for writing Anymouse Reports and mailing envelopes are available in readyrooms and line shacks. All reports are considered for appropriate action. Please send your reports to the Naval Aviation Safety Center, NAS, Norfolk 11, Va., now!

QUITTING TIME

"Because of me a pilot had a very close call. I'm an aviation electrician and I performed a service change 560 on an AD-6. It's a change where the grip is changed on the control stick. It was performed on a Friday afternoon when everyone was in a hurry to secure. After I installed the grip I checked for operation of the horizontal stabilizer. It went up and down fine so I secured and called it quits. I should have checked for proper operation as I had the switch hooked-up backwards. I would have saved the pilot that close call. Believe me from now on I'll check everything twice for proper operation."

DISCONNECT TIMING

"While cruising at 38M at mach.8, I received a utility hydraulic warning light on the emergency panel of my A4D-1. I immediately headed home, descending VFR. I was not able to drop the speedbrakes and did not want to pick up too much speed in case I had to make a power boost disconnect.

"The controls worked normally, but I extended the stick immediately. A request for a straight-in to the duty runway was approved and with about 5000 feet of altitude left I slowed to 135 knots and dropped the landing gear manually. It seemed to take an excessive time for the gear to lock down.

"It was evident at 5000 feet that I was too high to make the runway so I made a 360-degree turn and lined up on the runway with about 1500 feet altitude. Passing through 1000 feet the controls became exceptionally stiff, and I made no attempt to maneuver them. I immediately pulled the power boost disconnect. The aircraft stayed in level flight and I made an uneventful landing. The brakes worked normally.

"A leak in the horizontal stabilizer control caused the hydraulic emergency. In retrospect and at the time it occurred, I knew I was in a bad spot pulling the power boost disconnect at low altitude. The past history of aircraft becoming uncontrollable after disconnect could have well caused extreme embarrassment.

"It is highly recommended that a planned disconnect be made above 5000 feet if a hydraulic emergency exists. I estimate it took me 15 minutes to get on the deck after the emergency, and the power boost controls worked for 14 minutes. The whole episode was complicated by the fact that I had no radio receiver at any time."

LOOSE PROCEDURES

"On takeoff in an SNB the port engine quit after getting airborne (110 knots at 200 feet). I sure was embarassed. The fuel selector was on nose tank which was *empty*. I was able to shift to a full tank and get it started without loss of altitude.

"What had happened was that I turned the selector to NUMBER ONE tank when I started the engines. It was number one when I went over my checkoff list, but my inexperienced observer turned it when he locked the tail wheel!"

Did you take off with an unlocked tailwheel?—Headmouse

DOWN, DOWN, DOWN

"I was on a routine ferry assignment to deliver a HUP-2 just out of overhaul from Jax to the West Coast. Even with no one except myself, a plane captain and a full load of fuel the aircraft was close to max weight.

"At El Paso I refueled then climbed to 6000 MSL to clear the city and headed west. The surface of the desert west of the El Paso and the Franklin Mountains was about 4500 feet and the air, up where I was, was rougher than a cob. I thought it might be smoother down on the surface so down collective and down I came.

"With about 300 feet altitude above the ground I attempted to slow my rate of descent with up collective.

Well, I kept pulling up and the HUP continued down. I finally had full up collective, normal RPM and climb power (considering the altitude) but the rate of descent did not change. By this time I had only a few feet to go so I pulled back on the cyclic to flare off my forward speed. That did it. Up came the nose, in fact I couldn't stop it!

"With all my strength I was pulling up collective and pushing forward cyclic with the whole thing vibrating so that nothing in the cockpit was visible. The nose was so high that I could not see the horizon in front of me.

"All of a sudden everything was smooth and normal with a forward speed of about 25 knots at about five feet above the sagebrush. I picked up cruising speed and continued my flight a wiser helicopter pilot.

"The moral I believe is to be careful of your recovery from autorotation-like descents at high altitude."

Suggest chopper pilots interested in a power setting discussion review "Down Collective," September 56 APPROACH—*Headmouse*

Continued from preceding page

CHECKOUT

"After a hop from Barber's Point to Hilo, at 9,000 feet, I shot an actual LF range approach and we landed. After about a 30-minute layover we refiled for a return hop. We did *not* refuel however, and as this particular *Beech* had been flown as much as 5.2 hours on a single hop, I wasn't sweating it. We took off with about 50 percent of our fuel on board (or so we thought) and cruised back to Barber's Point at 8000 feet.

"On our landing we experienced a fairly bad bounce (the other pilot was flying, naturally) and we waved off. On the second approach we came around burning fuel out of the left main which indicated 20 percent remaining. At about 80 feet off the deck and 500 feet from the end of the runway it got really quiet inside the cockpit. You're right, both fans quit!

"With much haste the tanks were switched to the right main (which indicated a hair-line above zero) and the wobble pump was given many good hard strokes. We got back in business once again, made a good landing and rode the wobble pump all the way back to the chocks.

"Although I have about 60 hours in the SNB, it is all copilot time and I've never actually been checked out in it. I'm not really experienced enough in it to really know its limitations. This was the reason for the complacency on my part. Hereafter, no matter how short the distance, whenever I land and shutdown, I will see to it that the tanks are filled to the top again."

STEER CLEAR

"I was on a simulated night combat air patrol in an F3H-2N and everything was fine till the leader and I returned to the ship.

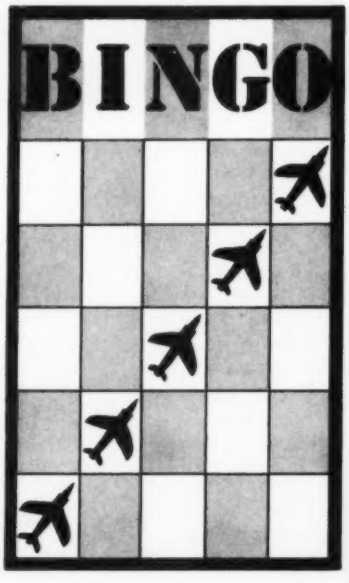
We both had fuel for only one pass and bingo to the beach. He took a waveoff and I bolted (had one CV landing in past two weeks). At this time we were operating about 80 miles from Westside NAS which the ship's aerologist said was IFR. So, the ship sent us up to an air station which was supposed to be VFR. This station was 100 miles away.

After climbout I tuned in the destination Tacan and found it to be inoperative. Since both the leader and myself had been given individual climbouts after our passes, neither of us had the other in sight. I called CIC at the ship again to get the destination UHF homer frequency. This was the only other piece of nav gear I had. Their transmissions were very garbled but I once understood them to say they had my "feet dry" which was impossible since I couldn't have gotten over land in the elapsed time since leaving the ship.

There was a low overcast so I couldn't tell where the beach began. Next try was the trusty RadFac Charts. After much searching they failed to produce a UHF homer for my destination.

At the time I was down to 1300 pounds at 20,000 feet with nothing in sight that I recognized. Two other Tacan stations also gave me no results. Finally I squawked 'emerg' on IFF and raised a GCI station on guard. I received a steer to NAS Westside and made a straight-in. I landed behind my leader who had also decided to land there. The field weather was clear.

We both landed with around 600 pounds—gage error of this amount is not uncommon."



BREAK RIGHT, OR...

"Recently while enjoying an exciting game of acey-deucy in the squadron readyroom I happened to overhear an interesting situation of the UHF radio, which, I might add, is a handy 'gadget' in any readyroom. It went something like this:

'Tower, this is El Hornblow flight over north initial with a low fuel state, request immediate break for landing.

"At this point I conceded my acey-deucy game and pinned my ear to the radio.

'El Hornblow flight, call over break, . . .'

"Since three flights had called within 60 seconds over north initial, I decided to observe this from outside. Since El Hornblow flight was screaming everything but Mayday, the tower cleared those four jets to land first, instructing the two other flights to reenter at north initial.

"As I stepped outside, I focused my eyes toward the north and there appeared four jets at the break. They broke sharply at 350 knots plus at close interval. The approaches were fast, wrapped and dangerous as seen from any pilot's viewpoint. The first pilot landed hot, forcing his bird onto the runway. The second was so fast and close to his leader that he was forced to go around (on a low fuel state). The remaining two jets landed but I must admit it was hairy.

"As the second jet waved off, he wrapped it up so tight that had Mr. Grumman himself seen this he would have said, 'That *Cougar* should stall and spin about now.' Fortunately old P & W pulled him out of this unforgiving maneuver and he came screaming into the final. With approximately one-third of the runway behind him the pilot touched down with one big question now staring him grotesquely in the face.

'How the heck am I going to stop this thing?

"After blowing both tires, his last resort was to drop the hook. The gear was engaged and as the saying goes '85 miles of chain was pulled down the runway'. The plane came to rest in the overrun in mud which was knee deep to a tall giraffe.

The moral of this story can be plainly seen. . . . When you are low on fuel, make that first break, approach and landing look good, feel good and it'll be something you will be *able* to write home about.

Continued from preceding page

CLICK-CLICK

RECENTLY I departed a mid-west air station, going cross-country to a southwestern AFB on an instrument flight plan. About 45 minutes out of the air station I found I could not transmit my voice though the transmitter was in operation and my receiver was working normally.

Several stations tried to contact me and I tried to acknowledge by clicking my mike and sending an "A" or "N" in response to their interrogations. One station heard my clicks and after 25 minutes of cluttering channel four, he was fairly sure that he had positive communication with me.

By this time I was approaching my next check-point and this station was beginning to call me. This operator immediately recognized my clicks in answer to his transmissions. He requested that I give a series of clicks when over his station. I complied with his instructions and through his help made a position report.

Through this operator I was able to hold almost a normal conversation by using the clicking system. When one operator took 25 minutes to establish communications, another only required seconds.

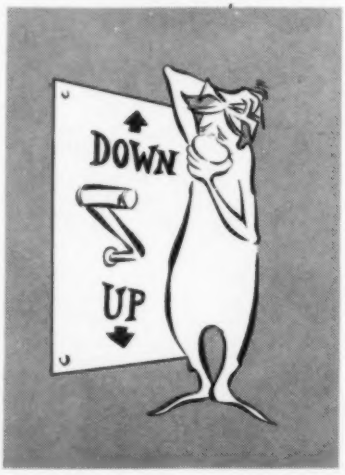
From this experience it seems that all ground communications personnel, military and civil, should be briefed on the use of clicks in such an emergency.

TRIM TAB DESREVER

I WAS scheduled for a training hop and went through the regular pre-takeoff check list, running the elevator tabs through and setting at 5 degrees nose down for the S2F-1. After takeoff the nose came up sharply and I trimmed nose down but this only increased the pressure on the yoke. I leveled off at 100 feet and looked at the elevator trim indicator which indicated 10 degrees nose down at this time; Airspeed 130 knots. Checking the elevator trim I found the trim tab *reversed.*

The day previous a new elevator trim actuator had been installed. The installing electricians did not know that the trimmer motor had been run to the FULL UP position before being received by this squadron. When they installed the motor the trim tabs themselves were in the FULL-DOWN position.

After the hookup was completed they ran the tabs through getting indications in the cockpit of 20 degrees UP and 20 degrees DOWN throw. What they didn't know was that the tabs and the motor were 180 degrees out of phase. When the tabs were FULL UP the motor and indicator was FULL DOWN and *vice versa.*



The only way to prevent this dangerous situation is to have a positive visual check that the indicator and tabs agree whenever the trimmer motor has been changed.

CLEAN SWEEP

"I had been cleared to land my A3D on a 6000-foot runway and after finding that the wind was two knots, variable, I requested another runway, which would give me some 3000 extra feet The tower stated this longer runway was closed. I accepted the 6000-footer with no hesitation, having made a good many landings on it with no strain. The operation promised to be routine with no hint of things to come.

"The approach was normal; the landing good, if I do say so myself. I touched down very close to the approach end at a nice speed of 115-118 knots. Then I popped the drag chute switch and waited for the familiar tug that indicates a blossomed chute. There was no tug, and the old A3D continued moving right on down the runway.

"So I applied the brakes good and steady expecting the Hytrol action to do the job. Again nothing. I then flipped off the Hytrol switch so that I might use normal braking action. Still there was no result and the plane was merrily eating up what was left of the original 6000 feet of concrete.

"The end was coming at me at an alarming rate and, as I reached for the emergency air brakes, I was mighty glad Douglas had built in another system. The air bottle did the trick and soon we were skidding and slowing on locked wheels. Naturally the tires blew, but I couldn't have cared less, except that one went before the other which threw me into a swerve which I could not completely control with nosewheel steering. I thought for an instant that I would get a wingtip but then the other tire let go and the plane seemed to right itself.

"We came to a stop about eight feet from the end of the runway and at about a 60-degree angle to

the runway heading. Frankly, I thought I had bought the farm. That is about as close as you can come and still miss.

"Prior to flight the drag chute circuit had been checked and was reported as being OK. Also the brakes functioned normally taxiing out and held for the full power turnup. Hydraulic pressure output had been checked prior to takeoff and all hydraulic systems operated correctly.

"Prior to landing there had been a rain shower at the field and there were scattered wet spots on the runway though the majority of it was dry. I have landed the A3D on wet runways several times and never experienced any difficulty in stopping, but I never had a chute failure on a wet runway.

"The extra 3000 feet of runway which I had originally requested would have looked like an extra three miles to me when I saw the boondocks staring me in the face. As it was, two blown tires and three sets of jangled nerves were little enough to write off, but it could have been a four million dollar plane and three men.

"Later I discovered the longer runway was closed because there was trash on it and Public Works did not have a sweeper available with which to tidy it up. How many sweepers could be bought for the cost of repairing one A3D, or how many man hours could be bought if the runway had to be cleaned by hand?"

BuAer has ordered a number of vacuum type runway sweepers at $38,000 each.—Headmouse

WHY?

1. Plane captain pulled up flaps without instructions when a go-around was commenced in an R4D-6.

2. Even the plane captain didn't know why he did it.

3. We sweated it out. And used all available power!

4. We got away with it luckily.

5. Next time I would break the plane captain's arm. In addition all my plane captains have been and will be instructed to keep their hands away from all flight controls unless expressly instructed otherwise.

Remarks: One less horsepower, one more pound of weight, or one less knot of airspeed and this would have been an aircraft accident report.

NO ONE expects you to flip through the All Weather Flight Manual at 20,000′ to find out whether you're supposed to report, without request, when vacating a previously assigned flight level for a newly assigned level (AWFM, pp 14-11).

They do expect you to make the report though, because they blissfully assume that your white card means you know enough of the manual, and other pertinent rules, to do the right thing at the right time.

Are they assuming too much in *your* case? Try yourself on these. If you miss one, close your eyes and ruminate a bit about what could happen if you missed it for real— like losing your transmitter right after Washington Center clears you to "climb immediately to 4000'" . . . whaddo I do now, mom?

1. How much altitude deviation is permitted in a US or Alaskan ADIZ?

2. Automatic range monitoring equipment cuts off the ident. signal when automatic keying fails or when the course displaces _____ degrees or more.

3. Rule of thumb: On a range leg, a 10 degree drift correction will compensate for a beam wind of approx. _____ of your TAS?

4. On green and red airways, eastbound flights should request EVEN thousands—TRUE or FALSE?

5. The RadFac shows MAGNETIC courses of range legs—TRUE or FALSE.

6. The bird-dog in your *Beech* won't hunt on the lower bands, nothing but prairie in sight, gas getting low—where do you find commercial broadcast stations listed, QUICK?

7. Are you violating Civil Air Regulations when you make an emergency deviation from flight rules for safety reasons?

Answers on page 21

HEADMOUSE

What's Happened to the Horn?

Dear Headmouse:

Since your fine magazine first appeared, its pages have offered a variety of ideas and mechanical devices to prevent wheels-up landings.

My question is: Who took the landing gear warning horn out of the airplane?

Before going any further please let me explain that I am in favor of the warning horn. It served me faithfully in the SNJ and bouncing *Beech* and gave a sense of security no mere reading of the check-off-list can do.

Here is concrete evidence in favor of the warning horn, something no other device or idea has yet produced, and it came out of your own publications:

a. In fiscal 1956 and 1957 the SNJ made over two million landings. ONE was gear up. The SNJ has a warning horn.

b. In the same period the AD (all series) made about 850,000 landings. SIXTEEN were gear up. *The AD does not have a warning horn.*

c. In fiscal 1956 and 1957 the *Beech* made over 736,000 landings. ONE was gear up. The *Beech* has a warning horn.

d. In the same period the S2F made 460,063 landings. NINE were gear up. *The S2F has no warning horn.*

You will note that multi-pilot models are included (for those who say two pilots are better than one in remembering to put the lever down).

No jet has a warning horn and look at these figures. In two years the TV made some 340,000 landings with 10 of them gear up. The F9F (all series) made a little less than 1,000,000 landings and *FIFTY THREE* (*53*) were gear up!

Please, if you can, point out any fault in my reasoning that a gear warning horn can bring the gearup landing for jets down to the SNJ or SNB level. The figures are there for anybody to see. Either there is a valid, actual reason for taking the horn out of the airplane, or nobody has bothered to interpret the statistics.

Please find enclosed a clipping from "Fifth AF Flying Safety News" . . .

IAN (GABRIEL) TOMLINSON

Headmouse's Note: the following is excerpted from the clipping: After an F86-D landed wheels-up on a GCA, pilots were cautioned to doublecheck gear down in landing patterns where power settings are being manipulated as during GCA . . . An Unsat Report recommended that the landing gear unsafe warning horn system be wired in series with the landing flap actuator. The warning horn would blow under the following conditions:

a. When throttle is retarded below 77 percent and the landing gear in an unsafe condition.

b. When throttle is retarded below 97 percent with flaps down and the gear in an unsafe condition.

"What do YOU See?"

Dear Headmouse:

If my observations over the years have been correct, Anymouse obtains the major portion of his preflight check procedure from one principal source, the pilot who originally checked him out in that particular aircraft. To this basic routine Anymouse occasionally adds an item or two as a result of casual observations of fellow Anymice. Thus it becomes apparent that most of us base our preflight check , procedure on "hand-me-down" and "pot-luck"—a situation hardly satisfactory in view of today's high cost of living . . . !

To alleviate this condition wherein knowledge is being spread in considerable degree through the element of chance, it would seem desirable to institute a special section in one of our safety publications — APPROACH, for example—devoted to illustrating and explaining in detail the need for pilot attention to certain specific items during a preflight check. Each issue, for each operational aircraft, could contain one or more pertinent items appropriately illustrated with photographs and/or diagrams as necessary. Source material for these items should include AAR's. A suggested title might be "What do YOU see?"

Anymouse will still derive his own check procedure, but he would now be exposed to far more lucid information than heretofore . . . !

ANYMOUSE

Have you a question concerning aviation safety? Send it in to Headmouse on an Anymouse Report and he'll do his best to help.

Good idea but APPROACH *must confine itself to more general subjects than detailed checklists for one model. Readers have complained when we devote too much copy to one aircraft. Suggest readers forward such checklist suggestions for their aircraft (via NASC if desired) to BuAer for incorporation in Pilot's Handbooks.*

Very resp'y
Headmouse

Brickbat

Dear Headmouse:

I'm too mad to wait for working hours . . . Here goes . . .

Refer your pages 24 and 25 November issue of APPROACH. The boy that contributed the Anymouse expressed my sentiments exactly. Part of my mad is caused by my most recent disagreeable experience with Aviation Supply; to wit, a choice between drawing an unsafe oxygen mask, or doing without one.

Another couple of degrees towards my boiling point is the recent "economy" move which requires enough high priced paper work to buy a dozen custom tailored space suits in order to *exchange one* miserable flight suit which doesn't fit anyhow! Not to mention the harassment to the individual chasing down these assorted stubs and requisitions.

But what really tee'd me off was Headmouse's mealy-mouthed answer! I thought Headmouse is "beyond the gent in the gear cage." If, in fact, your Headmouse is just a sanctimonious old wind bag, full of platitudes and glib answers, but incapable of action, then I say stop fooling the public and get the hell out of the safety business because you can't significantly affect it anyway.

Believe me, I'm not alone in my anger at Headmouse in this instance. Who the devil is going to fight the system if not you guys?

As for a signature—what for? If you've got any teeth, you'll bite a chunk of Aviation Supply, and my purpose will have been achieved; and if you're just a bunch of adroit sore heads, I can't win anyway.

NORTH ISLAND

By spotlighting personal equipment and supply problems Headmouse believes improvements are bound to result. With considerable support from higher levels improvements have already been noted—more is expected.

Very resp'y
Headmouse

Up 1000'

Dear Headmouse:

The recommendation in "Birds of a Feather," Anymouse, p. 18, Jan. '58, stated that simulated single engine practice with one engine feathered should not be less than 5000 feet above the ground. OpNav Instruction 3710.7A, Section 8, paragraph l, e states, never simulate single engine with a feathered prop below 6000 feet.

USMC ANYMOUSE

Right! We goofed in leaving Anymouse's recommendation unchanged.—Headmouse

Night Flight Light

Dear Headmouse:

How do you talk the Parachute loft-maintenance gang — Master at Arms — Aerology, Operations, etc. out of a flashlight when you have field and are about to depart on an instrument flight at night? Do you take up arms against a sea of troubles (and write an Anymouse) or take off without the d----d thing?

FRUSTRATED

Get one before you go, somehow. Many air stations have flashlights on sale in snack bars for those pilots caught without one. On the same subject: facilities for hot food should also be provided transients. Ref CNO message (DTG 182244Z January '57) to all ComNABS. See reprint of same in Weekly Summary, 14-20 January 1957.

Very resp'y,
Headmouse

Answers to Quiz Page 19

1. None—see AWFM, pg. 14-8
2. Three—see AWFM, pg. 15-6
3. one-sixth—see AWFM, pg. 17-2
4. False—see AWFM, pg. 11-2
5. True—see AWFM, pg. 12-3
6. SFID, of course—see AWFM, pg. 11-5
7. Not really, for the CAA, by its own rules, permits such emergency deviations. But you'd better be sure it's a bonafide, justifiable emergency, 'cause they'll ask you for a written report. Instead of a slap on the back you might get one farther down on the anatomy if your "emergency" was declared so you wouldn't miss happy hour. See AWFM, pg. 13-1

pro-fes´sion-al

. . . A CONSCIENTIOUS EFFORT BY EACH INDIVIDUAL . . . TO INCREASE PROFESSIONAL KNOWLEDGE AND COMPETENCE COUPLED WITH STRICT ADHERENCE TO SOUND OPERATING AND MAINTENANCE PROCEDURES IS NECESSARLY TO REDUCE AIRCRAFT ACCIDENTS.
Excerpt COMNAVAIRLANT DISPATCH

YOU are a Naval Aviator! a professional pilot. How do you measure up in your profession?

The naval aircraft you fly represents an investment in the nation's security, and you are trained to accomplish a mission to protect that security. *You are the best this or any nation has!* Altruistically, you are maintaining the peace for the survival of our way of life. But, are you strictly professional?

Everyone recognizes a surgeon as a professional man; should you need your appendix removed, you certainly don't hesitate to obtain a surgeon to do the job! Lawyers, school teachers or another aviator wouldn't possess the specialized talent for the operation. Conversely, no one would ask a lawyer, surgeon or teacher to scramble in a jet interceptor—they'd want you, the professional aviator.

Let's measure you, professionally in aviation, against the yardstick of the surgeon in his practice of medicine! Are you as proficient in your profession? Let's start with educational backgrounds. . . .

During college, the embryo doctor took a pre-med course, and you studied any of a number of courses which to your way of thinking would provide you a suitable income for the rest of your life. Naval aviators are graduates in the full range of college curricula from Fine Arts through Business Administration or Journalism to Engineering in its many branches.

Yet on graduation day, you as a future flyer and the doctor-to-be are on a par: both of you have earned a B.A. or a B.S. degree and the path leads to higher education.

The doctor enrolls (paying his own way) for another 4 years of classroom training in medical school, striving for the sheepskin that reads: MD!

You joined the Navy for flight training, a combination of textbook and on-the-job education, with a share of PT thrown in. About 36 AvCad paydays or 18 months later, you got your wings. and finished your "formal" education.

Disregarding the different time elements, compare the relative standing of the two "professionals" at this point in their careers. The doctor has earned that MD certificate to hang on the wall, can recognize a sick person, but can not legally practice medicine. The pilot has his wings and his commission, can take an airplane aloft, fly and land it, but can not be expected to make a pin-point drop of an A-bomb. However, this much must be appreciated: neither is an amateur any longer.

The Doctor's next assignment

pro-fes'sion (-fesh'un), *n.* [OF., fr. L. *professio*. See PROFESS.] 4. a The occupation, if not purely commercial, mechanical, agricultural, or the like, to which one devotes oneself; a calling in which one professes to have acquired some special knowledge used by way either of instructions, guiding, or advising others or of serving them in some art; as, *the profession of arms, of teaching, of chemist. The three professions*, or *learned professions*, is a name often used for the professions of theology, law, and medicine. b Broadly, one's principal calling, vocation, or employment.

pro-fes'sion-al (pro-fesh'un-al; -'l), *adj.* 1. Of or pertaining to a profession, esp. a learned or skilled profession; as, *professional* training or ethics; a club limited to *professional men*. 2. Characteristic of or conforming to the technical or ethical standards of a profession or an occupation regarded as such; as, *professional courtesy*; his action was not *professional*; distinctly *professional* work.

Syn.—Trained; skilled, expert, finished; paid, hired.

Ant.—Lay, unprofessional; unskilled; amateur.

pro-fes'sion-al, *n.* 1. One who engages in anything professionally; a professional worker;—opposed to *amateur*.

—Websters New International Dictionary, Second Edition.

is a one-year internship (during which he will earn $300) which will put him in position to take his State Medical Board examination, obtain a license so that he can hang out his shingle as a general practitioner or continue with specialized medicine. Let's follow him through until he becomes a surgeon.

You, as a parallel, begin your squadron's training syllabus to learn to fight the fleet aircraft to which you have been assigned. We'll follow you along in your profession too, to see if you are as sincere as the Doctor.

He starts a period of residency in a hospital — approximately four years for general surgery —and at the end of that time, must be passed on by the American Board of Surgery. Passing this examination he is finally a professional surgeon; nine years after finishing college he has established himself in his chosen field!

All during this nine-year period, he has subscribed to and/or read various journals and textbooks such as Surgery, Gynecology and Obstetrics, the Journal of the American Medical Association. . . . He will continue to study technical papers until he finally retires—not light reading or whodunnits. He realizes that he has to study to keep abreast of the best in his profession, and each year will try to attend county, state and national medical association meetings—no per diem—to find out if he is keeping up with the improving methods.

Back to you, Aviator. . . .

You are in a squadron, with your wings, and flying about 40 hours a month. You have some squadron job assigned that involves a certain amount of paper pushing. Your squadron is constantly receiving technical official information—some of it will be routed to you, some will appear on all-pilots read-and-initial boards.

But in general, you have attained professional standing and you're a grown-up now—it's expected of you that you will perfect yourself. Sure, the safety officer and the maintenance or operations officers will frequently call your attention to something new in your aviating, like changing traffic patterns, new airways procedures, operating restrictions for the plane. . . .

But no one tells you that you should study the All-Weather Flight Manual, that the HMI for your airplane is good reading for professional aviators, that the Airman's Guide can help you avoid procedural errors. . . .

It's dishearteningly unfortunate that most learning must be "incidental"—you're exposed at random to a world of information and some of it just naturally rubs off on you. Be eager! Get in and dissect the muscles that cover the skeleton of your professional knowledge.

Find out why induced drag increases as the stall speed is approached; why jet engines operate more efficiently at altitude; why sweepback is built into the wings; what the effect of dihedral is on lateral stability...

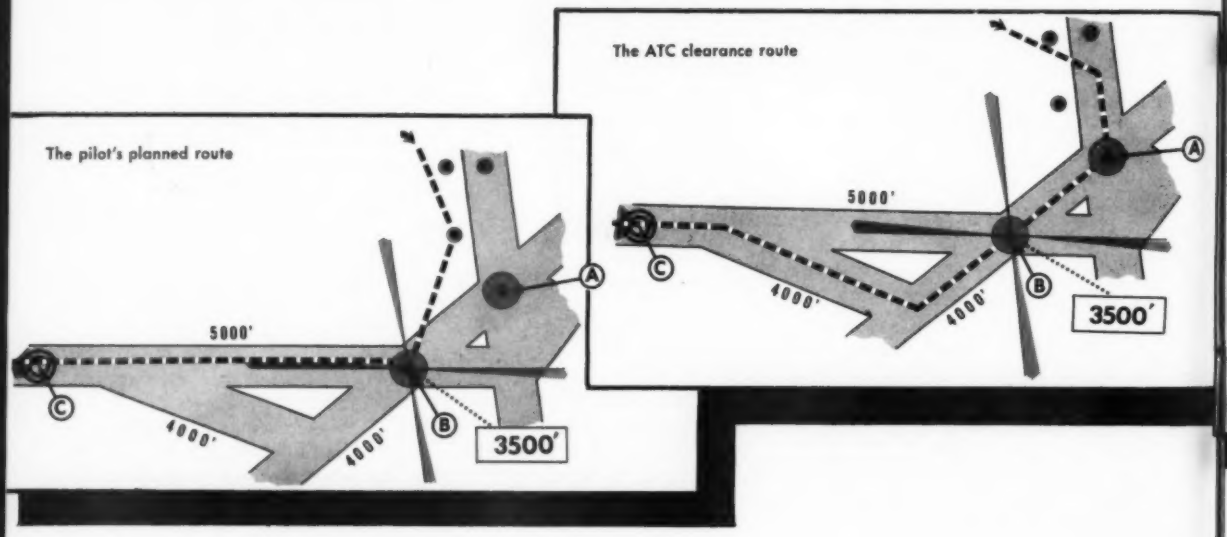
Sure, you became a pro when you got your wings.

But the AARs still come in on the uninformed professional who did not know how to get the most out of his airplane without exceeding the limits. The really tragic AARs are those on the professionals who violate the ethics of aviation and become a statistic during flat-hatting, going into IFR weather on a VFR clearance, don't survive a crash because protective equipment available was not used . . .

BE PROFESSIONAL. When you stop learning you had better start buying a lot more life insurance! ●

truth and consequences

A DIGEST OF SIGNIFICANT AIRCRAFT



ONE WAY STREET

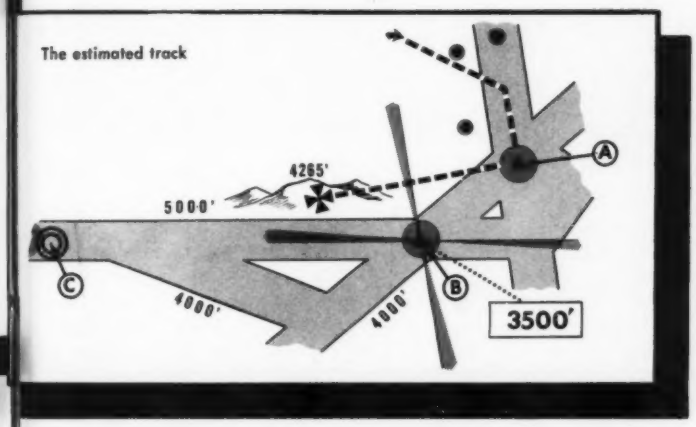
RIGHT at the beginning it should be brought out that the accident board considered the primary cause of this accident undetermined and the chain of command agreed.

However, it was noted by a senior aviator that "sufficient evidence exists to indicate laxness or unfamiliarity on the part of the pilot with minimum airway altitudes and other airway regulations." Such speculations as are stated or inferred are developed from facts contained in the accident report.

It began on a drizzly April morning at an overseas station when the green card pilot (3000 hours) and his young copilot (900 hours) preflighted and accepted an SNB for a Saturday cross-country. Their route lay along a mountainous coastal area with low ceilings and light rain forecast for the first half of the trip. There was no threat of turbulence or icing.

Both pilots were strangers to the area. The pilot had flown on two local VFR hops but no airways flights. This was to be the copilot's first flight in the area.

The pilot filled out his DD-175, got the weather, then signed his own IFR clearance. A statement



from one of the endorsements to the accident notes that "It is unfortunate that this flight plan was not reviewed by . . . personnel thoroughly familiar with the local area airways conditions and regulations." (*What are Saturday procedures in your ops office?—Ed.*) A few of the reasons for this statement are listed:

- The point of departure was located in an area of extensive air traffic and the pilot made no request for one of the standard instrument departures which was the usual procedure.
- The planned departure route (a southerly direction) included an airway which is used almost exclusively for northbound traffic inbound to the numerous airfields in the area. (*Does your ops office have visuals, or mimeo lists of IFR outbounds?—Ed.*)
- The minimum crossing altitude of a homer 60 miles out was 3500 feet but the flight plan listed 3000 feet.
- A westbound leg was listed on the flight plan as 3000 feet whereas the minimum en route altitude was 5000 feet over a part of this leg and 4000 feet for the remainder. Westbound traffic is even altitudes therefore the minimum on the flight plan should have been 6000 feet.
- The last portion of the flight was northerly on blue airways which requires odd altitudes. The pilot filed for even.

Admittedly, these are nit-picking details but details such as these warrant speculation about the pilot's preparation for this flight. It does not appear that he paid much attention to the Rad-Fac chart even though he knew the weather required an IFR flight.

Shortly after the aircraft taxied to the turnup spot the tower was ready with the ATC clearance. It was read to the pilots and the tower operator asked for a readback. There followed an approximate one minute pause, possibly because the route was different from that which the pilot had filed for. The clearance altitude was 4000 feet.

The readback contained several inaccuracies which were corrected by the tower and then clearance for takeoff was given.

Takeoff was normal and the *Beech* flicked through low scattered clouds then vanished from view into the overcast.

A position report was made at "A" with an estimate for "B" but in the two contacts made with ATC no altitudes were given. The voice transmissions indicated the pilot was calm and in command of the situation.

A minute after the ETA for "B" ran out, ATC attempted to contact the *Beech* without success. An AF plane contacted it and relayed the ATC request for an "over time" at "B" and an estimate for "C". No acknowledgement was heard from the SNB and further attempts at contact were unsuccessful. There is some evidence to show that the SNB crashed shortly after receiving the call from the Air Force plane.

At the expiration of the destination ETA the SNB was declared overdue and then SAR was notified. Next day a heli-

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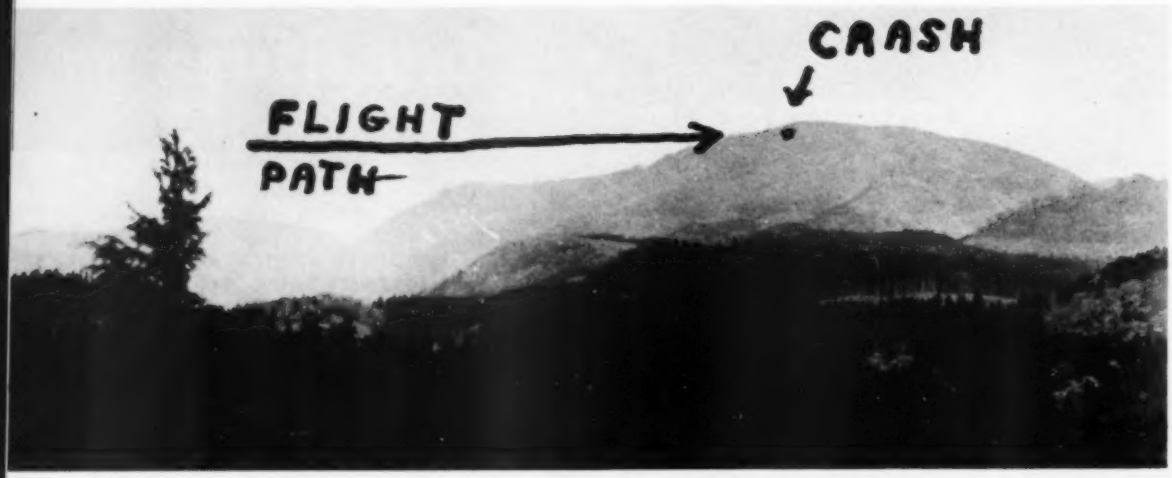

Arrows drawn by the accident board show the flight path and crash scene, 265 feet below the mountain crest. The pilot was flying his assigned altitude but was well off course.

copter spotted the wreckage at the 4000-foot level on the northeast slope of a 4265-foot mountain. It was five miles north of the nearest airway and that airway required a 5000-foot MEA.

First contact was with trees whose breaks indicated a wings-level attitude. Marks further along the flight path indicate that the plane was also flying level, that is, with no perceptible climb or dive initially. The accident board found indication of structural or power plant failure prior to impact.

It was reported by the board that range "B," under certain atmospheric conditions, is occasionally difficult to home in on in the northwest quadrant. The range station is located on the southwest coast of an island and is blocked to the northwest by a 2400-foot mountain. Thus the board put forth a supposition that the pilot may have taken up a heading from "A" direct to "C." This supposition was strengthened by the readings of several flight instruments and radio controls, plus a plot of the relationship of "A," "B," and "C."

Had the aircraft been flown direct from "A" to "C" at 4000 feet and 142 knots with the forecast wind conditions (12 knots from 350 degrees), it would be at the crash site at about the time the Air Force plane lost contact with it.

The course of 264 degrees is approximately correct for a flight direct from "A" to "C." The heading on the remote compass in the crashed SNB was 264 degrees.

The red ADF needle was set to the frequency of the range station and the needle indicated 222 degrees relative. Possibly the aircraft was drifted to the north by winds? The forecast winds should have pushed it to the south.

As a result of the investigation the board reached the following conclusions:

- That the preflight planning for this flight was improper and dangerously inadequate.
- That had the assigned route been successfully flown, the accident would not have occurred.
- That because of apparently normal voice procedure . . . with the Air Force plane, the occupants of the SNB were not aware of the impending danger at that time.
- That for reasons unknown, the flight plan assigned by ARTC was not complied with.
- That the primary cause factor is undetermined because:

There were no witnesses and no survivors.

There is no positive evidence of true flight path of the aircraft prior to initial impact.

There was no evidence recovered from the wreckage to substantiate whether the deviation from assigned clearance was intentional or unintentional.

The secondary cause factor was modified to read to error of flight planning.

FLIGHT LEADERSHIP—A pilot with 343 total hours and 12 hours in the FJ-3 was scheduled as a wingman on a Nav hop. It

was early afternoon when the flight became airborne on a VFR flight plan and began climbing to cruise altitude. At 20,000 feet the two aircraft leveled off for a short period to stay under a cloud layer, then continued climbing VFR to 40,500 feet.

The wingman stated that several thunderstorms were circumnavigated and then the flight entered what appeared to be a thin layer of cirrus. Unfortunately the thin layer of cirrus turned out to be a thunderstorm, highly developed, with extreme turbulence and heavy precipitation. After several minutes in the storm the wingman stated that turbulence became so heavy that he could not maintain his wing position.

Meantime the flight leader had begun a "brakes out", nose down, reversal to port and then the wingman called to say he had lost sight of the leader. The wingman turned to starboard, descending. He had trouble recovering from a nose down attitude and when he reached 10,000 feet, still in severe weather, decided to eject. This was successful and he swung into the clear below the clouds about 200 feet above the ground.

The wingman was considered by the accident board to be a relatively inexperienced aviator with limited actual instrument flying in any type aircraft. He had not previously flown the FJ-3 under instrument conditions.

Originally the wingman was given primary cause for the accident but this was changed by higher authority. The flight leader was assigned the primary and fundamental cause as it was his responsibility to avoid any type of flight which was beyond the capabilities of any pilot in the flight. It was believed the wingman was led into a situation which he would not have entered by himself, and once in this situation, it was beyond his ability to prevent an accident.

IN HARNESS, BUT—While approaching a normal break position over his home field, a student aviator flying a TV-2 experienced a loss of power. He immediately extended his gear and started a nose-low turn to the middle key position. Just before reaching the middle key position the landing gear was raised when it was evident that there was no chance to make the runway or even the field boundary.

With the plane at treetop level the pilot was advised to land straight ahead which he proceeded to do. Touchdown was made in a flat attitude at about 140 knots with speed brakes DOWN, gear partially retracted and flaps UP. A tree sheared off the starboard wing but the aircraft remained upright and slid straight ahead for another 450 feet, coming to rest on the bank of a small pond.

Although the aircraft received strike damage the accident board was surprised that the pilot was fatally injured as the fuselage remained intact and the initial impact with the ground did not appear to be too severe. Investigation at the scene revealed that the shoulder harness was locked, but the straps were loose. The Medical Officer's report coupled with an extensive autopsy by a local naval hospital, stated that the loose shoulder harness was the major contributing factor to the extreme injuries suffered by the pilot.

Until the loose shoulder straps came to light, there was surprise that the pilot received fatal injuries considering the slight cockpit damage.

OVERHEARD AT A CLEARANCE DESK—

Duty officer: Sorry I can't clear you. Your IFR flight plan doesn't show a regulation fuel reserve.

Jet pilot: Well just pencil in another 20 minutes worth of fuel aboard.

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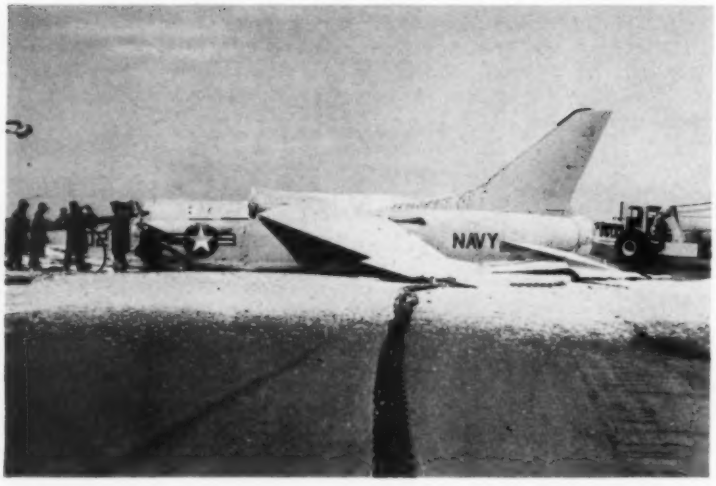


In trying to force his F8U onto the runway at higher than normal speed, the pilot hit nose wheel first and began to porpoise.

FLARING ERROR—On his third flight in the F8U the pilot landed nose-high with an excessive sink rate and scraped the tailpipe on the runway. His later briefing on how to avoid dragging the tailpipe, set forth the desirability of accepting a hard three-point landing from a high rate of descent rather than attempting to check it by flaring.

He did not fly the next day and then was grounded for 24 hours with a head cold. The following morning he was scheduled for his fourth fam flight. The hop was normal, and after completing the events on the fam stage flight card, the pilot and his chase pilot returned to the field.

Because of the proximity of towns, the local traffic pattern required 1500 feet at the break and on downwind leg. During his earlier experience the pilot had operated almost exclusively from a field which permitted a 1000 feet downwind leg.

At the 180 spot the pilot called "gear-down-and-locked." The tower cleared him to land, saying there would be a slight crosswind from the right. The pattern was normal until the 90-degree position at which time the aircraft appeared slightly high and flat. During this time the chase pilot had what he called a "medium long interval" on the fam pilot.

The F8U passed over the approach end of the runway in a flat attitude with about 30 feet of altitude. F8U pilot witnesses noted the pilot retarded the power to idle.

Instead of holding this flat attitude until the airspeed had dropped sufficiently to permit the nose to be rotated upward into a more favorable landing attitude, the aircraft nosed over, while still fast, and hit the runway nosewheel first. Initial contact was between 1000 and 1500 feet from the approach end.

After the first bounce the aircraft pitched forward and again hit nosewheel first about 3000 feet down the runway. The nosewheel sheared on this impact. From this point on a well developed porpoise was in progress and the exact number of bounces varied with estimates from four to seven. On one of the contacts the port main gear carried away and the starboard tire blew.

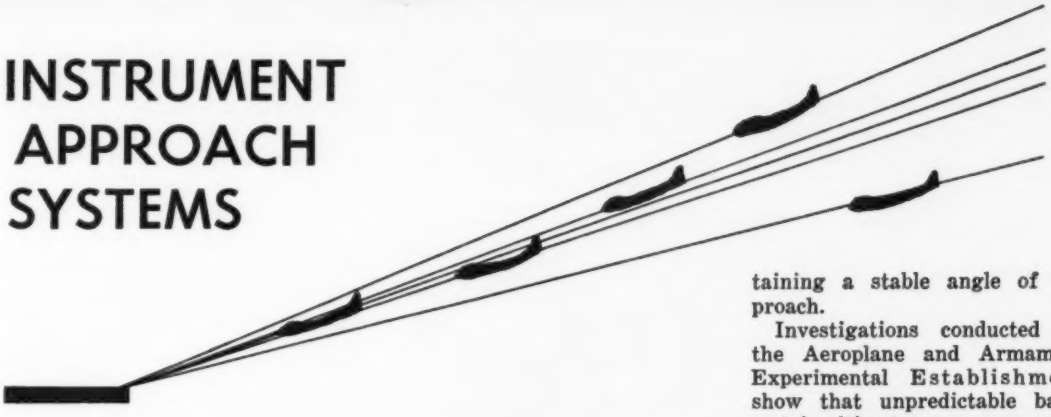
Following the second bounce, which was the first point at which the pilot realized the situation was serious, he attempted to add power for a waveoff. However, with the low acceleration at this power setting, the decision was made to shut down by the time sufficient RPM was available for a waveoff.

Final impact was made about 4100 feet down the runway in a left crab with the left wing down. It slid off the runway to the right then swerved to the left and stopped on the right side of the runway. The pilot received a slightly stiff back from the severe bouncing.

After the crash the pitch trim potentiometer on the pilot's stick grip was found in the full nose-down position. The accident board felt that the nose-down trim was inadvertently applied at some point during the landing.

The squadron commander noted that an experienced F8U pilot will be used as a runway duty officer during the fam stage to monitor landing technique and to initiate early waveoffs by radio when required, stressing the fact that "an early waveoff on a poor approach is mandatory."

INSTRUMENT APPROACH SYSTEMS



THe following is an extract of an Air Ministry instruction to RCN:

"The attention of all pilots is drawn to the likelihood of accidents during instrument approaches due to inherent errors in the barometric altimeter, and also to the dangers of flying above the glide-path during GCA or ILS approaches.

Recent simulator trials at the Royal Aircraft Establishment have shown that it is as dangerous, if not more so, to fly substantially above the glide-path, as it is to fly below it, during a GCA or ILS approach; and analysis of undershoot accidents which have occurred during instrument approaches emphasized this.

It appears that, in most cases of undershooting, pilots were flying above the glide-path just before making visual contact; indeed in some cases pilots stated that this was done deliberately.

The danger of approaching too high was in the difficult period of transition from instrument to visual guidance in poor visibility conditions. If the aircraft is above the glide-path at the transition point, the last instructions from the GCA controller or ILS indicator, before the pilot starts to reorientate to visual flight, will be that he is too high; the pilot will also see part of the lighting pattern, which will confirm the need for an increased rate of descent. The approach lights are a very poor guide when the angle of approach is changing; thus, if the rate of descent is increased immediately visual contact is made, there is a considerable danger of the aircraft striking the ground before obtaining a stable angle of approach.

Investigations conducted by the Aeroplane and Armament Experimental Establishment show that unpredictable barometric altimeter errors as great as plus 200 feet may be present during landing, particularly after high altitude sorties. Accordingly, to minimize the resultant dangers during instrument approach, the following regulations are being brought into effect immediately:—

(a) *ILS and GCA*—Pilots are to carry out approaches on ILS and GCA to as great a degree of accuracy as possible flying strictly on the glide-path on the final approach. In the case of ILS approaches the inner marker beacon is to be the last decision point on the glide-path at which overshoot action must be taken. Since this position corresponds to the minimum approach altitude for the aid, it follows that except in emergency, pilots are not to use the aid in weather conditions below the stated minimum for their ratings.

"WAVE-OFF", RCN

Also please see "Wrong by 10,000 Feet," page 44.—Ed.

FLIGHT VIOLATIONS

SCOPA—Numerous reports of flight violations continue to occur in connection with violation of Executive Order 10291. The Savannah River Plant prohibited area (P-378) seems to have an attraction for pilots who aren't quite sure of where they are until intercepted. Many violations stem from dodging clouds and failure to account for winds, but they all wind up with unpleasant action of some sort. A recent one resulted in revocation of the pilot's instrument rating and restriction to quarters. "SCOPA" That means, brother, Steer Clear of Prohibited Areas.

That Urge Again—This lad's mother told him to fly low and slow, but he figured low and fast was more fun. After takeoff he executed a snappy 180 and came back low and fast across the field, narrowly missing a civil light plane. Pilot was admonished and an entry was made in his log in accordance with OpNav Inst. 3750.5A. Both the incident and the discipline could have been worse—but both could have been avoided altogether.

The aircraft settled slightly—scraping the prop tips and both wing flaps.

Touch *and* whoa!

TOUCH-AND-GO landings in multi-engine models with pilot and copilot seem to produce an increased sense of urgency and pressure in the cockpit to retract the gear.

Unless positive cockpit communication is used the results may be as sad as the following examples. Decide the question of, *"who* is to do *what?"* on the flight line or downward leg.

Case I—During a night proficiency flight, pilots of an SNB began making touch-and-go landings. On one of the landings the starboard prop struck the runway when the copilot misunderstood a hand signal and prematurely raised the gear on the takeoff run. Damage was discovered during routine postflight.

No explanation of signals to be used was made prior to flight. A thumbs-up signal for retracting the gear was the only one used by the pilot. During rollout the pilot gestured for the copilot to take over the plane. This was done by extending the pilot's hand toward the copilot. Mistaking this signal the copilot put the gear handle in the UP position.

It was recommended that passing of control not be accomplished during any such critical maneuvers as landing or takeoff except under emergency conditions.

Case II—Completing a touch-and-go landing in an SNB, the pilot decided to raise the flaps prior to takeoff, something he had not done on previous landings. The copilot mistook the pilot's hand movement in raising the flaps to be the wheels-up signal and thereupon retracted the wheels. A belly slide was made for 500 feet.

It was found that the aircraft was between the point of oleo extension and actually being slightly airborne. There was no preflight discussion between the pilots of how the flight was to be conducted.

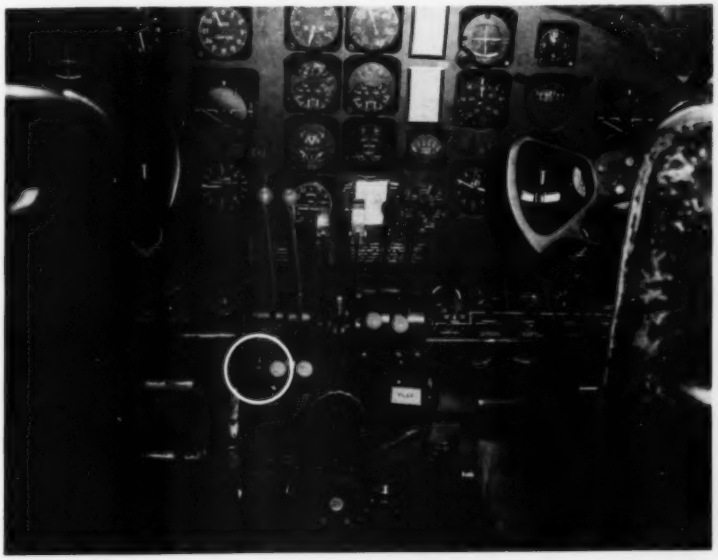
Case III—A check pilot was demonstrating a more desirable approach and touchdown during touch-and-go landings in an SNB. After touchdown, power was applied and the copilot took it upon himself to raise the wheels without receiving the command from the pilot for such assistance. He stated he was thinking of what he could do to help the pilot and was looking out of the window watching the ground. He did not look back in the cockpit until the gear handle was raised. A wheels-up landing was made straight ahead on the runway.

In all three cases OpNav Inst 3710.7a, paragraph 12, if properly used would have eliminated the cockpit confusion. Standard procedures as outlined in this instruction require an *oral* and hand signal for actuating gear and flap controls. Only the hand signal may be omitted.

Good judgment and sound practice requires that landing gear be left down until the aircraft is definitely airborne, about 50 to 100 feet in the air, and that there is no possibility of effecting a runway landing in the event of engine failure. In Case II the aircraft slid to a stop 2500 feet from the approach end of an 8000-foot long runway.

Case IV — Both pilots of a *Beech* had over 4000 total hours and both also had considerable time in the *Beech;* 600 hours for the pilot and 1000 hours for the copilot.

Scheduled for a day-familiarization flight the pilot was cleared to shoot touch-and-go landings. On the final for his first landing he told the copilot to be ready to pull up the flaps after touchdown.



Good judgment and sound practice requires that landing gear be left down until the aircraft is definitely airborne . . .

After touchdown the pilot orally requested flaps up and added power for takeoff. "On reaching for the flaps," the copilot said, "I took hold of the wrong control and raised the wheels."

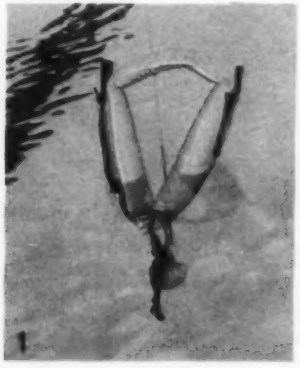
He immediately realized his mistake and slammed the gear handle DOWN. The aircraft was almost at flying speed and the fuselage did not touch the runway; however, the aircraft settled slightly, scraping the prop tips and both wing flaps.

Switches were cut and the SNB rolled straight ahead to a stop. Total time for the hop was .1 hours.

A possible contributory factor to this accident, according to the board, was the lack of preflight briefing regarding the signals to be used when flaps or wheels were to be raised or lowered. The copilot added that he had not been in a *Beech* for about six weeks, and the accident could have been avoided by not attempting to land so soon after the initial takeoff with a consequent increase in familiarization time.

MATS had the following to say about this problem: "Premature retraction is usually caused by preoccupation—thinking about one thing and doing another. There are two controls which should never be actuated without extreme caution: the gear handle and the feathering button. It's also good practice to inform the other crewmembers before the action is taken. This "sounding off" is a good idea even for the lone fighter type. Yelling "gear up" to himself before actuating the level will tend to synchronize the action with the thought and eliminate, during that crucial second, all other distractions. . ●

Scuttlebutt is causing some people to lack confidence in helicopter rescue techniques while wearing the new Mark IIIC life jacket. Helicopter Utility Squadron ONE spells out the knacks and facts in . . . .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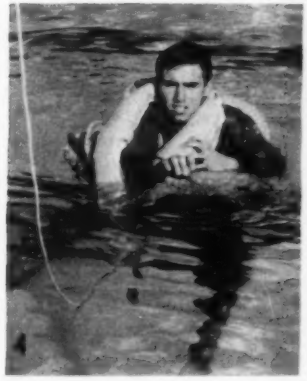
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Dear John

Well, Tiger, just saw your orders to that "Crusader" outfit on our copy of Officers Orders from BuPers. Since you're being unchained from that LMD (Long Mahogany Desk) which you pushed around on shore duty and are headed back to the carrier Navy, I have a gem of wisdom to pass on before the bum dope artists beat me to it.

All the newer fleet aircraft are utilizing, or soon will be, an integrated torso parachute harness and donut-shaped life jacket, Mark III C. Now this is where those previously mentioned scuttlebutt artists take over. They say that if these new fleet aircraft go into the water, and if you're wearing this new gear, that the good 'ole helo can't get you aboard.

This situation, the rescue by helicopter of downed airmen wearing the integrated torso parachute harness and MK III C life jacket, has been the subject of much discussion and actual test. Little if anything, however, has appeared in print from which you, the potential rescuee, might derive any comfort or peace of mind. This letter is orginated to help, in a small way, to fill that gap.

Our squadron, HU-1, which provides helicopters for all carriers, cruisers, and numerous smaller ships of the Pacific Fleet, has experimented extensively with this problem. There is *no* problem when rescuee education and cooperation are complete and available. Proper procedure is easy and simple and is almost the same as you and I sat thru in Ready Three and were briefed on in years gone by. Remembering our nonchalant attitude, prevalent

in the whole air group, of "I heard all this before. Different guys said the same thing on the last cruise. Let's get back to the game," has caused my concern for all your "living dolls" in California and hence this letter.

After evacuating the ditched aircraft and inflating your life jacket, the first thing to do is, *Concentrate on getting out of your chute.* This is absolutely essential. Popping that chute while you're on the way up the hoist cable or climbing into the 'copter will most certainly end in disaster. In such a case you'll be back in the water tangled in your chute, and this time frantically trying to get out of the way of the helicopter which will be following you into the water post haste. Such a "popped" parachute has already cost the lives of one downed pilot and one helo crewman attempting to rescue him earlier this year when both became entangled in the shroud lines and drowned. Most aviation personnel carry sheath knives for flight operations and it is our firm belief that those who do not, should start to carry one yesterday if not sooner.

If you have trouble and cannot operate those "quick opening" catches to get rid of the chute, use that knife and cut it off. *After* and only *after* this, if the copter is still in its approach to you, use a smoke flare to indicate wind direction for the pilot. If he's already in your immediate vicinity, forget the flare and mentally review the procedure for entering the sling. Don't waste your energy trying to grab the sling, we'll get it to you. When it's in the water it will float in a vertical position (Fig. 1).

Enter the sling *ONE ARM AT A TIME.* This is the correct procedure and will allow you to use your other arm to hold the life ring down in place (Fig. 2 thru 6). If you raise both arms over your head the Mae West may ride up high enough under your armpits to hog tie you quicker than Wyatt Earp drawing his Buntline special. After you are properly positioned, the hoist will be activated and you will be raised into the helicopter (Fig. 7). You can help speed up your entry into the 'copter by facing toward the aft end of the rotating machine when you're close enough to reach the hatch.

This squadron has provided an alternative to be used in the event you injure an arm in ditching your aircraft. We have securely fastened to the sling, a strip of green parachute webbing ending in a snap (Fig. 8) which you will find attaches easily into the D-ring on the torso harness on either side of your chest, the very same D-ring from which you have already released your parachute. You will then be hoisted into the helicopter in a comfortable position with the horsecollar hanging free beside you (Fig. 9).

I want to repeat that these procedures and facts stated above are *not* mere theory. Actual jump tests in the open sea have proven this method. Pick-ups, utilizing the integrated harness and Mark III C life jacket, are made every week as a matter of routine at the NavAirPac survival school. Your education will enable us to perform a quicker and more efficient rescue. This, we know, is uppermost in your mind as it is in ours and we hope this blurb will help. Our prime mission, desire and every hope is to save *your* life if and when you ever need us.

This squadron is presently experimenting with a butterfly net to be used for rescues of unconscious personnel. When perfected, this gear will be used in place of our present crewman-in-the-water method. We will be most gratified to receive any constructive suggestions of any nature from any source concerning this problem which is of paramount interest to us all.

Save your money, that Hong Kong liberty is great,

Jim

For more on nets see P. 39.—Ed.

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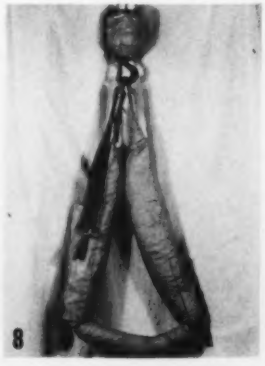
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from the MOR file

Medical Officer's Reports (MORs) frequently contain good tips for aviators. Here's a rundown on major problem areas noted:

AFTER the accident, what are the recommendations the doctor most often makes, which might have avoided the injuries or even the accident?

With this thought in mind, someone did look over some 220

Medical Officer's Reports submitted to the Naval Aviation Safety Center in calendar 1956. The recommendations fell into five categories: personal equipment; procedures; physiological and psychological; human engineering; and design.

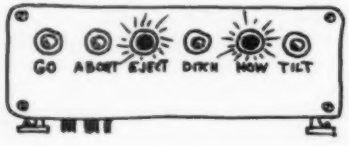
PERSONAL EQUIPMENT—The biggest single listing was under personal equipment—38 percent of the comments.

As you almost might be able to guess from the frequency with which you hear about it—the most-repeated recommendation under personal equipment is that you *use* it, and use it properly. One fourth of the recommendations advised use of shoulder harness and seat belt. Sure, we've heard this before and it's not new. But these recommendations mean people were killed and injured by not using restraining equipment properly.

Still on personal equipment, the flight surgeons joined the pilots in suggesting improvements in helmets. They also

pointed to a general need for better understanding of flotation gear and the equipment attached to it, and stressed the need for automatic devices and equipment for ejection.

PROCEDURES, and PHYSIOLOGICAL AND PSYCHOLOGICAL—These two categories almost tie for second place in number of recommendations received, with about a fourth each of the total.

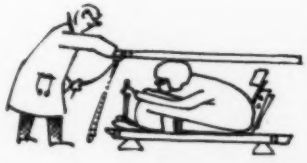


You might expect "procedures" would not come in the Flight Surgeon's field, but these recommendations primarily concern emergency procedures—how and under what conditions you should eject, ditch, execute an emergency landing; and also the use of check-off lists.

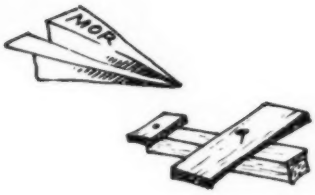
In the physio-psychological category there is a wide variety of comments, but again you could probably guess the two items most mentioned. From infancy to old age they are taught and apparently ignored; diet and

rest. The doctor is still and always advising his patients and pilots that for efficiency and accident prevention, enough sleep and proper diet are a must.

HUMAN ENGINEERING and AIRCRAFT DESIGN—These two classifications, with ten and four percent respectively, received the fewest recommendations. Probably they should receive more, but Flight Surgeons, as in the case of other accident board members, have received little training in this field.



The human engineering suggestions dealt mainly with changes in design or location of actuating devices, (e.g. switches, levers, . . .) and with change in location of, or need for, warning devices.



The aircraft design recommendations most frequently involved structural changes to protect the human body.

These fields will probably receive more attention as Flight Surgeons receive more training in this aspect of accident investigation.

In all categories, careful analysis results in the specific and concrete recommendation, which is the more valuable one, in contrast to the generalized, "a better gizzmo," or "inadequate" rest.

Some of the suggestions must await action by designers.

AVIATOR ACTION — But in the meanwhile the aviator can follow the arrow to safety by acting on the recommendations for proper food, sufficient rest, and proper use of safety equipment.

And, aided by those in charge of training, he can insure thorough knowledge of equipment such as the flotation gear, and can pre-plan his emergency procedures.

So the consenus of Flight Surgeons' prescriptions for long life turns out to be no different for pilots; not new, not dramatic, not quick; but simple daily standbys of keeping fit and training for emergencies.

Out... Cold!

THE PILOT took off about 1140 one cold morning for a routine F3D flight. In the right seat was his commanding officer.

Around noon the pilot switched to 100% oxygen—he explained later that he had no particular reason for doing this. The skipper remained on normal oxygen throughout the flight.

'Long about 1220 the skipper noticed his pilot was having some difficulty in controlling the plane. At this time they were at 35,000', with a cabin pressure of 26,000'. The pilot made an erroneous position report which gave the skipper more cause for concern and close scrutiny, and then the machine went into a dive which the C.O. had to recover from by reaching over and grabbing the stick.

The pilot then turned his oxygen regulator to SAFETY, giving himself oxygen under positive pressure. Within two or three breaths he realized that he was seeing normally again, and that up to that time he had been seeing with tunnel vision only.

They were down to around 30,000' by now, and the cabin heater quit for the day. And it was an extremely *cold* day—about minus 40°C. The pilot was wearing low cut oxfords—and no gloves. Ice formed on both their masks, and things looked mighty cold and grim until they got down to traffic pattern altitude. The landing was "uneventful" because they didn't crash, but both pilots still look back on it as an event not quickly forgotten.

At the base hospital, both pilots were pleased to learn they were not frostbitten, although they were so cold that they had an ashen color. An analysis of the pilots blood sample showed no sign of carbon monoxide poisoning.

The oxygen system and masks were checked thoroughly, and revealed a faulty pressure reducer. An inboard leak in the pilot's mask was also suspected as contributory—the mask leaked readily under 4 inches of positive oxygen pressure. When the pilot tried on a mask of the same size, but with the newer straps which permitted it to be cinched 1½ inches tighter on each strap, it didn't leak even under 12 inches of pressure. His original mask had the older type straps.

It was concluded that the pilot had suffered hypoxia from a combination of faulty oxygen regulator and poorly fitting mask. The loss of cabin heat aggravated the situation to a dangerous degree.

Recommendations:

At the *very first* suspicion of hypoxia, safety pressure should be used immediately.

Every flight calls for appropriate dress—for the expected environment and the unexpected. Being "out-of-uniform" for a flight is far more hazardous than at inspection.

Masks should be checked at regular, frequent intervals, and any malfunction or suspected irregularity should be cause for action "prior to next flight".

CHOPPER PILOT

WEAR and TEAR

WHAT do you feel like after 13½ hours of continuous flight in a helicopter? 3$2% (&'$ 2&%$"%" CENSORED! — Scientifically speaking, we mean, how do you feel? Ready for more? Got the shakes? Putting in for transfer to blimps?

To get a more scientific answer than the one above, two flight surgeons took advantage of an available opportunity and made some findings to which jet and prop pilots will say *amen*.

Early one morning two pilots took off in an HO4S. The flight had been planned to determine the feasibility of long-range flights without refueling. The aircraft was fitted with an auxiliary fuel cell and means to add oil to the crankcase.

Since this material-wear-and-tear marathon was expected to endure some 13 hours, the medical officers decided to use the flight as a pilot-wear-and-tear study too.

The pilots were young, strong and healthy—23 and 26 years of age, and were in excellent physical condition as indicated by thorough physical examinations and supporting special tests.

They were told to do anything they could dream up to make themselves comfortable during the flight, except to take medical stimulants.

When the physical examinations were repeated after the 13.½-hour non-stop flight, they showed the expected fatigue, moderate aching, and marked hearing loss. For some unexplained reason, visual acuity showed some improvement.

Hearing loss—Hearing tests revealed only a slight transient loss of hearing the whispered voice in one pilot, but hearing loss in the higher frequencies showed an astonishing average loss of 21 decibels. After 18 hours, recovery was almost complete, and was above normal four days after the flight. One pilot used cotton ear plugs, but these are quite ineffective.

Marathon flight to test chopper provides data on crew fatigue.

Weariness and physical discomforts — according to the pilots, the constant noise of the helicopter and the two radios was the principal cause of their fatigue. Radio ranges were flown, requiring that one of the pilots listen constantly. Noise is known to be one of the causes of fatigue.

One pilot developed a moderate headache, relieved somewhat by aspirin, which persisted until the next day along with a roar in his ears and a whine (identified as 1500 cycles per second). The other developed an aching just under his rib cage both front and back. This is ascribed in part to leaning forward in order to rest his control hand on his knee (suggesting a possible design problem).

It is known that sitting in the same position too long will result in aches because lack of stimulation reduces circulation and allows muscle waste products to accumulate. "Exercise" aids this condition. The pilot had an almost complete lack of appetite during and after the flight, but no nausea.

Speaking — The pilots reported that as the flight continued they found they had to shout through their intercoms to converse, thus adding to their discomfort. A knowledge of in-flight speech techniques would have simplified their problem somewhat.

Seating — Body comfort was greatly enhanced by the use of special seat cushions of small spring construction with a fiber plastic covering, of the type commonly used in automobiles. Both pilots were highly enthusiastic about these seat pads, preferring them strongly over the usual seat pads or the sponge rubber cushions used in the HOK. (Caution: Don't try this on an ejection seat!)

Mental fatigue—The pilots said the low point of mental fatigue was reached during the fifth hour of flight when they experienced a "sinking feeling" with the realization that many long hours of flying were still ahead. Later their spirits become progressively more elevated, until at the end of the flight they felt almost elated and would have liked to continue in spite of physical fatigue.

Perhaps the most pertinent comment was made by the pilot who had made several long flights at the time of the Tampico diaster—"When you have a good enough reason to fly that long, you don't get tired."

Toxic Fumes? — This topic was investigated by a different helicopter squadron, and was primarily an effort to determine if carbon monoxide poisoning could be responsible for occasional complaints of engine fumes, headache and a general ill feeling among crewmembers. While not dangerous in themselves, it was felt these complaints certainly decreased efficiency.

They report that "the findings, while not entirely comprehensive, indicate that CO intoxication is unlikely in this aircraft if proper precautions are taken, especially during adverse weather conditions."

The mission of this squadron requires prolonged hovering at very *low* altitudes, so that the helicopter actually sits in the cushion of its own rotor wash, thus there is constant recirculation of air past the exhaust and through the compartments.

(No high altitude tests were performed here. BuAer is investigating reports indicating that at high altitude in another model helicopter, there may be definite CO danger.)

The manufacturer of the HSS-1, the model most flown in this squadron, recommends that if hovering in a downwind attitude, all doors and windows should be closed and the vent system used. In practice, all hovering in this squadron is done within a narrow range of upwind attitude, and therefore the helicopter is ordinarily flown with all winddows open except for the port escape hatches.

The cockpit air was tested with the rubber bulb, color change equipment, which is reliable only for high concentrations of carbon monoxide. However, the blood test also failed to show significant CO concentrations.

Conclusions — The medical officers feel that the helicopter investigations, "while not as comprehensive as we would like, reveal a few interesting considerations:

"First, we feel that CO contamination is not a factor during warmup or forward flight.

"Second, there is a slight gradual build up of CO in the pilot and crew compartments on prolonged hovering fiight. In our study the build-up was excessive in only a few instances; however, we must recognize a potential danger.

"Third, the amount of CO buildup is dependent upon: (1) the duration of hover, (2) the wind velocity, (3) heading, (4) the environmental temperature, and humidity which affects the requisite power settings, (5) the exhaust gases and fuel vapors which were noted by the crews. These vapors in themselves constitute a nuisance which reduces crew comfort and efficiency, and may possibly be toxic also."

Recommendations — In the light of the investigation, the squadron medical officers recommend that:

- Emergency hatches should be kept closed at all times.
- In winds of less than five knots, with a high density altitude, hovering in one spot should not exceed 20 minutes. If longer hovers are required the copilot's window should be closed.
- Hovering should be conducted in the wind, or slightly to the left of the wind, not to the right.
- Headache, giddiness, or queasiness in a crew member should be reported to the pilot and the hover should be temporarily terminated. Similarly, excessive fumes or vapors should be taken as a warning of potential build up of carbon monoxide or other toxic agents, and corrective measures taken."

Such independent voluntary reports from the field present hazards common throughout aviation and as such, constitute the backbone source of aviation safety.

The first of the two investigations above was done by Capt. R. G. Witwer, (MC) USN and Dr. C. W. Metcalf, LT, (MC) USN; the one on toxic fumes was done by Dr. C. J. Hauptman, LCdr (MC) USN and H. W. Tracy, LT (MC) USNR.

For related info see "Too Pooped to Pop" APPROACH *April 1956.*

ur flight surgeon • notes from your flight surgeon
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No Helmet

UPON pullout from an AD-4 bombing run the pilot noticed smoke in the cockpit and the port side of the cowling. The port side of the engine exploded and a fire started which was extinguished by cutting switches. Altitude was 2000 feet, and oil poured out of the cowling and over the canopy obscuring the pilot's vision. He opened the canopy and put his head out in order to see, and made a wheels-up landing, uninjured.

He lost his helmet from windblast because the chin strap was not fastened, as it should be just in case of emergencies such as this. Otherwise it was a very cool handling of the situation.

Helmet with goggles would have given him better vision by protecting his eyes from windblast and lack of helmet might have been fatal if the accident had been more severe.

Keep Your Chute

IN A RECENT water crash off the deck of a carrier it was noted that the pilot lost valuable time prior to exit from the cockpit by trying to get free of his parachute.

It is recommended that, if possible the pilot leave his aircraft with parachute attached so that time is not lost freeing from the parachute as well as disengaging from the additional attachments, the pararaft lanyard, bailout oxygen tube and others.

Also, regardless of rescue facilities available, rescue may take longer than the pilot estimates as it is dependent on sea condition, visibility and such factors. It is well to have the pararaft and all survival gear in case of need.

But by all means "Get free of the parachute prior to entering any helicopter pickup device."

Planning Plus

HE HAD a plan and followed it. He also made use of the equipment available to him. These were the factors which assured the survival of a *Demon* pilot who encountered an emergency some three minutes after takeoff on a dark, moonless night. He did not panic. Before ejection he zoomed, thus achieving both a slower speed and a higher altitude.

He didn't feel much shock ejecting but did tumble. The automatic belt opened before he realized what had happened. The chute canopy opened automatically before he could reach the D-ring. There was little shock here also. Because of oscillation he was unable to get back in the sling. He retained his H-4 with goggles up, and oxygen mask, all the gear in his pockets, and his N-1 field shoes. After he was in the water he released the harness, having no difficulty with the Capehart ejector snap.

Although he lost his life raft he retained and fully inflated his vest, and also orally inflated his G-suit. This added buoyancy held his legs up and he floated easily until rescue arrived some 6 hours later. His only discomfort was slight cramps in his legs and irritation at seeing so many ships pass nearby without seeing his signals.

Two Hours Sleep

When an analyst looks at "pilot factors," of a medical officers' report, and sees "Number of hours duty in last 24 is 22," and the "amount of sleep last 24 hours is only 2" there is little question that fatigue played an important part in the accident.

In this particular case the F9F-6 and pilot were not found. The pilot was a reservist with a civilian job as copilot with a commercial airline, and was considered very capable. Most of his night had been spent at his civilian job of flying.

No one wants to cancel a flight for lack of sleep—yet no one is immune to the effects of fatigue.

When a Knot is Not a Knot

ONE water-logged but fortunate survivor said,

"Once I released the raft from the pack it inflated easily, and I had no trouble entering it. Gear was lost from the raft when the nylon cord became wet and the knot securing it came untied as I was pulling it in preparatory to taking it aboard."

Recommendation: "That the survival gear be attached to the pararaft by some means other than a BOW KNOT in the nylon cord."

Another wet, perturbed, and fortunate survivor said,

"I believe the plane must have

been on its back or nearly so as I had to kick myself out Dunker style. I had no difficulty getting out of the cockpit with my parachute still strapped on—I came to the surface almost immediately. I inflated my Mae West but had lost the raft."

Bow knots are cute
In little girls' hair—
They ain't worth a toot
In a raft out there—

A knot must meet three important qualifications — can be tied easily, *will stay secured* without slipping, and can be released quickly and easily *WHEN DESIRED.*

Local experts say PR has discretion of what knot to use other than bow.—Ed.

Ungrounding

"AT THIS point in the history of naval aviation it is a little difficult to believe that pilots are flying and commanding officers are letting them fly without a medical clearance."

This statement is from a NavAirPac accident report which revealed that the pilot in a fatal accident had not received a flight physical after a stay in the hospital. This situation was also discovered in another accident report. Fortunately the lack of a medical clearance was not a known factor in causing either accident.

Manual of the Medical Dept., para. 15.70, 2, requires that all pilots have a physical examination after hospitalization.

ComNavAirPac also requires that in addition to the annual officer's physical, commanding officers shall order all pilots to have a physical: when reporting for duty, after being involved in a crash, following hospitalization or serious illness, and whenever it is considered necessary.

Assure physical fitness for flight.

Heads Down

FOLLOWING a power loss on a cat shot, the F9F pilot was forced to ditch.

Before the shot he had noticed that his seat was too high and that the button of his flight helmet was touching the canopy. Therefore you might suppose a helmet just clearing the middle portion would make contact as the canopy slides aft. And it did.

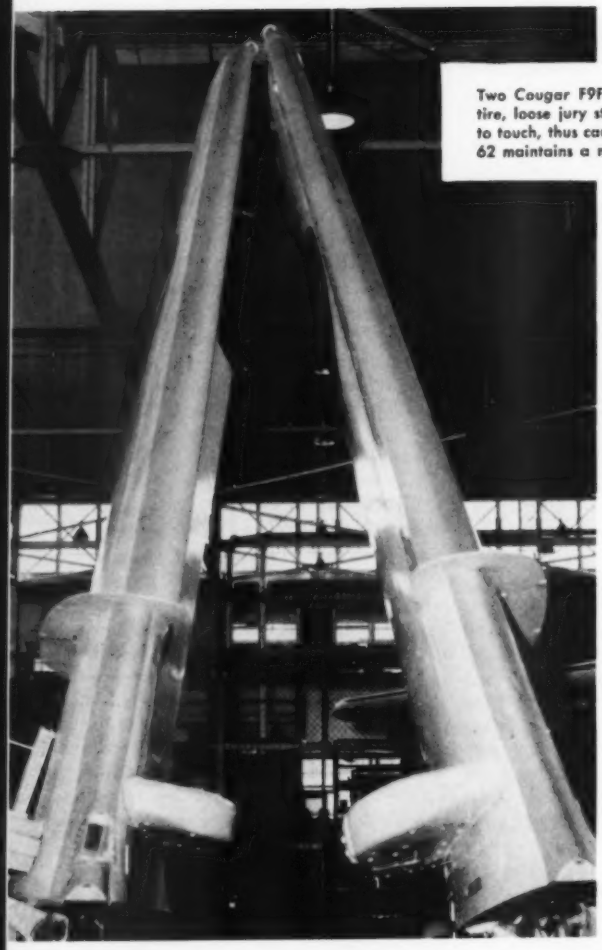
"When the canopy came off it jerked my head to the right and back due to the bow catching on the button on my helmet," the pilot said. With the seat in this position he was fortunate in receiving a neck strain as his only injury. He was rescued quickly by helicopter.

On Every Flight

FOLLOWING a recent ejection, the pilot found that both the left and right parachute shoulder straps had been secured over the left shoulder. By some unknown and unexplainable means, the pilot remained in the harness during the parachute opening and the 2500-foot descent.

There is a tendency for all aviators to be a bit careless in the handling of survival equipment which is only used on an average of once every 10,000 flight hours—but . . . !

SCOOPED UP—The Ireland-Kight rescue net scoops up incapacitated survivor, raft and all. Otis Kight, PRC, co-inventor was the willing "victim" in final design experiments. Full info and instruction were in 1 Aug 1957 Crossfeed, copies still available from NASC. See "Dear John," pg. 32.



Two Cougar F9F-8P wings nearly touch, missing by only 1½". A blown tire, slow leaking tire, loose jury strut, hydraulic leak, or any number of other failures can cause the wingtips to touch, thus causing two crippled aircraft. To avert this type accident Light Photo Squadron 62 maintains a minimum of 12" in the hangar and a minimum of 18" on the parking strip.

SHOOK UP, BUT GOOD—An F2H-3 had been given the light-off signal prior to launching. After light-off and a cockpit check, the pilot checked to the rear of the aircraft and requested a full turn-up.

While the aircraft was turning-up at 100% RPM, a 2nd Mech went under the wing and unplugged the external starting power leads. He came out in front and to one side of the starboard intake. As he straightened up, he was sucked into the intake hitting his head on the butterfly valve. He held on with both hands and kept his eyes shut. The pilot noted a drop in his starboard RPM to 80% as two men grabbed the mech's ankles and tried to pull him out of the intake.

As the pilot was being given the "cut" signal by the director, he saw the man in the intake. Both engines were secured and the mechanic rescued, suffering only minor injuries.

The men responsible for removing the intake screens in this case, had a practice of removing them at the yoke if possible, and otherwise when the aircraft was positioned on the catapult. The shaken mechanic admitted that while he was in the intake all he could think of was the numerous times he had been warned about getting in the danger zone near the intake.

FROM THE GROUND UP

Selected Forced Landings,
Incidents,
Ground Accidents,
Notes and Comments on
Aircraft Accidents

CO_2 USAGE—A preliminary report of a recent incident was discussed in which a plane captain applied CO_2 to a hot smoking brake and wheel. The assembly exploded and the plane captain received injuries. The current personnel turnover rate requires a thorough and continuing indoctrination and a motivated safety program to minimize this type accident. Misuse of high pressure air also falls into this category.

TV-2 CANOPY LOSS—In a recent incident involving a TV-2, the canopy was blown off immediately after unlocking it. This one combined equipment malfunction and personnel errors:

The cabin pressurization relief valve malfunctioned causing a pressure build-up in the cockpit which opened the canopy rapidly when unlocked. The canopy continued, striking the stabilizer because the canopy yoke adapter plate bolt was not installed by maintenance personnel following a routine check. Inspectors who checked the maintenance crew's *work* failed to note the missing bolt, the plane captain missed it during 3 pre-flight inspections and so did 3 pilots.

The reporting activity commented: "A maintenance system is only as good as the way in which personnel make it work. Careful workmanship and thorough inspections will prevent occurrences such as this."

HMI, USAGE—The injury of a maintenance man and damage to an R4D-8 reported recently by a FLIGA was traced to an error in the Illustrated Parts Breakdown applicable to that particular aircraft and assembly. It appears that the Upper Joint Block Fitting of the tail wheel strut was installed inverted, as illustrated in the IPB, and subsequently collapsed following the removal of the jack and pinned a mechanic under the aircraft.

The use of Illustrated Parts Breakdown for disassembly and reassembly purposes has been taboo for as long as aircraft have been flown and maintained. The primary purpose of the IPB has been and still is the identification of parts to assist in replacement and procurement.

The Handbook of Maintenance Instructions is the true guide of the maintenance man as it includes all the instructions for the complete sequence and methods of disassembly, reassembly, inspection and maintenance of all parts and assemblies used in the aircraft. The sequence of assemblies outlined in the HMI reflects procedures established by the manufacturer and is accepted on the basis of evaluation and experience. Furthermore, torque values, clearances, security, check and test procedures are included, all of which when applied as directed, result in a maintenance job well done.

AIRCRAFT FLUID SERVICE—Some of the people studying a recent accident, in which the power of all four engines was lost on take-off, have voiced an unofficial opinion regarding the cause. They believe that a mechanic inadvertently filled the ADI tanks with what he thought to be ADI fluid but which was actually Ethylene Glycol. Filling the ADI tanks with Ethylene Glycol could cause an incident of this nature.

Every precaution should be taken to *be sure* that the proper fluids are placed in the various systems of the aircraft.

"Know Your Tools, Parts, and Fluids."—FSF Mechanics Bulletin.

FAILURE OF TV GENERATOR—In-flight generator failure is a major hazard which can cause loss of aircraft and crew. Those who fly TVs should be aware of the possibility of generator failure, and know what to do if it should occur in flight.

Persons involved in TV operations and maintenance should understand the problem and take steps to minimize attendant hazards. The generator and battery are the only sources of electrical energy for the TV and the battery serves only as an auxiliary power supply which may furnish from 3 to 10 minutes of energy in an emergency. Battery power should be used only when the generator fails in flight. Intermittent shorting of circuits has been another TV deficiency. Short circuits can overload the already inadequate generator and precipitate early failure of this power source. Investigation of reported short circuits must be followed through until the cause is located. An on-the-surface check often is not enough to track down the trouble.

Pilots concerned should be familiar with applicable instructions which explain what to do in event of generator failure. Turn off all non-essential electrical equipment and land as soon as possible. This requires that crew members know how many amps are needed to operate each major electrically operated device in the aircraft.

NO JACKSTOP—While jacking an A3D, a 25-ton (R89-J-102-500) jack failed. The manual adjusting screw did not have a stop or any means by which the men using the jack could tell when the screw had reached a safe extension length. When screwed out to the last thread it broke, allowing the jack to buckle.

It was recommended that jack adjusting screws be equipped with a built-in stop to prevent extension beyond a safe limit and that personnel exercise judgment when using jacks not so equipped.

Continued

When high wind-over-deck proved wing jury struts inadequate for VS-36's S2F model aircraft USS *ESSEX* sewed three nylon straps together attaching parachute rings so tie-down reels could be hooked easily. Hand-tight, the slings were effective without damaging de-icer boots.

GROUND FLAP OPERATION—The T-28 flaps are designed to withstand considerable weights on the step holes—but only when the flaps are in the FULL DOWN position. Severe stress is placed on the flaps if pilots, maintenance or servicing crew climb up on them when they aren't fully extended. So please don't bend or break them—extend them.

CORROSION AT SEA—An F9F-8B landed with the port main landing gear up as a result of the failure of the port gear to extend by normal or emergency means.

Investigation disclosed the inner and outer rod assemblies Part Nos. 132335-1 and 132335-2 respectively, were tightly bound together by corrosion. Movement of one within the other was not possible with the normal force of the spring Part No. G101-268 as is required for proper operation of the landing gear door control valve.

With the landing gear extended the combination of the inner and outer rod assemblies is extended against spring pressure exposing a portion of the inner rod. This exposed portion had on it an amount of corrosion sufficient to prevent movement between the two.

The airplane had received a Third Intermediate Inspection as a special calendar inspection at which time it was signed off as having been properly inspected for corrosion and lubricated as set forth in the Handbook of Maintenance Instructions. This aircraft was not drop-checked as it was not required by this periodic inspection. Following this inspection it was exposed to weather on the flight deck of a carrier for five days. The aircraft was last flown 30 days previously. The landing gear system had not, therefore, been operated for a period of 35 days, most of which time the aircraft had been spotted on the flight deck of a carrier at sea.

The Accident Board noted the fact that the condition was not noticed on *preflight* is not considered inexcusable since the rod assembly is covered by a housing and visual access is very limited, being obstructed by the housing and the uplock cylinder, and is located in a dark recess which requires a portable light for illumination.

However, the presence of the corrosion indicated a maintenance error in failure to detect and arrest this corrosion as called for in the periodic inspection form. Lubrication of the corroded area cannot be expected to achieve the necessary result, that is, free movement of the rod assembly. So, careful inspection and cleaning is necessary.

The board recommended that close visual inspection of the rod assembly be stressed in future periodic inspections. In addition, it recommended that drop checks be performed whenever practicable during special calendar inspections.

BREAK THROUGH—When a pilot was trapped in the cockpit because of a maladjusted canopy actuating mechanism firemen attempted futilely to break through the canopy glass with a firemans' axe. After freezing the plexiglas by applying CO_2 with a fire bottle the canopy was broken without difficulty.

In any case it is well to remember that you are more apt to break through by striking the plexiglass near the edge of the frame.

JETCAL PROBES—INSTALLATION—During two aircraft acceptance checks, the thermocouple system harness errors were found to be 17 degrees and 21 degrees.

In an effort to find the faulty component and cross-check the existing procedure, a separate jetcal test was conducted twice by different individuals. The harness errors were found to be well within limits in both cases. The only variation between the two procedures was a resistance test given by the instrument shop personnel. It was learned that the instrument personnel were installing the heater probes and checking resistance to ground in order to detect shorts between the thermocouple loops and the heater probes. In an effort to eliminate these shorts, the heater probes were moved until the short was eliminated. Consequently, the probes were found in various positions, up and down the shank of the thermocouple, with an occasional probe just barely over the tip of the thermocouple.

Tests, using a short heater probe, have proven that the temperature gradient between the bottom and the mouth of the heater probe can vary as much as 300°C. If the loop of the engine thermocouple is barely enclosed by the heater probe, the harness error will probably be out of limits.

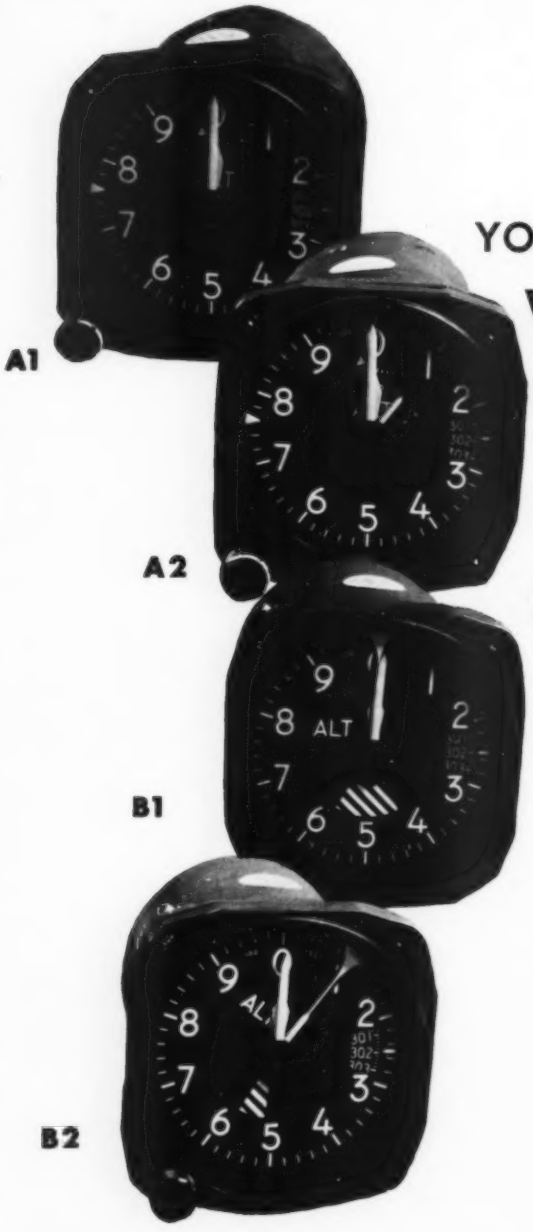
The basic idea behind this procedure is valid. It is possible to short out the thermocouple signal, if both parts of the loop are grounded. If this short occurs between the loop and the probe, with the probe properly installed, an extra thermocouple is simply placed in parallel with the existing thermocouples. The net result should not be noticeable, if both shorts occur at the loop end and both loops are at the same temperature inside the heater probe.

If this is not the case, the harness error will show the fault. Be sure that the heater probes are completely bottomed before calculating harness error.

A harness error of more than 10 degrees should be sufficient cause for investigation. One of the following faults may cause excessive harness error:

1. Heater probe installed incorrectly
2. Shorted thermocouple(s)
3. Malfunction of jetcal tester, heater, probes, and/or associated wiring.—*GE Jet Service News.*

This accident involving an F2H-4 illustrates why the practice of running over taxiway lights on any field is not considered a good one—fortunately glass cannot always withstand the load. This is especially true in jet aircraft with small high pressure tires.



YOU can be WRONG BY 10,000 FEET. . .

TWO RECENTLY reported incidents involving altimeter errors noted sea level barometric pressure settings in the altimeter window to be correct but the altitude pointer to be off by 10,000′. These reports indicate that all personnel are not familiar with the barometric scale setting mechanism or the pointer reading on the dial.

One reason this error is possible is that at the present time there is in service use one basic type barometric altimeter—a 50,000′ range instrument having two different dial configurations. This situation is further complicated by the fact that both configurations may be found in one airplane.

Illustration B-1 shows the latest configuration of the dial which has incorporated Aircraft Instrument Bulletin No. 2 of July 1956. The incorporation of this bulletin adds a new sub dial assembly with 100′ and 10,000′ pointers as well as cross-hatched warning area which is visible from

"Before you begin to learn the tricks of the trade, learn the trade."—Salt

0-17,000′ in diminishing degrees. It is completely blacked out above 17,000′.

These four illustrations show the two configurations of the indicator at zero altitude and at 10,000 altitude:

Illustration A-1 is the unmodified altimeter at sea level on zero altitude and A-2 is same indicator at 10,000′ altitude. Note same readings in barometric scale windows of A-1 and A-2.

Illustration B-1 is the modified dial showing sea level altitude and B-2 shows the same indicator 10,000′ with the same barometric scale reading as B-1. Note the difference in the cross-hatched area between B-1 and B-2 also the tilting of the sub dial as indicated by the word "ALT."

To better appreciate the possible consequences of faulty altitude readings visualize the pilot leaving a sea level elevation field. With the B-2 reading

on a instrument clearance and at altitude of 7,000′ this cross-hatched area blacks out and he later assumes he is at 17,000′ or better . . . a 10,000′ mountain is in his flight path!

Maintenance personnel can induce these errors by not properly checking on periodic inspections and preflights for correct altimeter settings.

If the dial setting knob is rotated in one continuous direction it is possible to have sea level reading on the window setting and 10,000 ft. indicated on the pointer due to the 360-degree gearing of the dial set mechanism.

The range of setting on the window is 28.00 to 31.00 inches of mercury and *the person adjusting this setting should not rotate the knob below 28.00 or above 31.00.* He should also verify that the 10,000′ pointer is at the approximate *altitude of the* field.

If airfield is at 10,000′ elevation it should read this. But, if at 100 ft. elevation it should be at approximate ZERO. On the modified indicators the cross-hatched area and pointers should coincide with field elevation.

Pilots should check for this error also before leaving the line with an aircraft or when setting the barometric scale with the tower barometer.

RING WEARERS — While performing a control check on an SNB-5 aircraft engine from the stub wing, a maintenance man slipped and caught his ring, worn on the fourth finger of his left hand, on an unknown engine part.

The man suffered a traumatic amputation of the finger.

Direct cause of the injury was attributed to the wearing of a ring. The reporting unit notes personnel have again been advised not to wear finger rings during mechanical operations.

S2F HATCH PREFLIGHT ITEM—The plane was at an altitude of 1500 ft. at an indicated airspeed of 135 knots in straight and level flight. A hard jolt was felt by the pilot and a decision was made to return to the base, following an in flight control check. The remainder of the flight and taxi to the line was without incident. A postflight inspection revealed the life raft hatch was missing (the raft had been removed prior to the flight).

The T-handle in the after electronics compartment had been partially actuated and the safety wire broken. It is believed this partial actuation was sufficient to cause the hatch door to vibrate loose. A complete inspection was made of all raft actuating handles and one other squadron plane revealed the handle in the after electronics compartment partially actuated and the safety wire broken.

As a corrective measure against a recurrence of the loss of this hatch cover all squadron planes will have the hatch handle re-safety wired and the inspection of the actuating handle in the after electronics compartment will be made a part of the plane captain's daily preflight inspection.

Item—An incident was reported wherein an FJ-4 main wheel was inadvertently installed on an F3D-2 as a nosewheel. This discrepancy was discovered by an alert check crew leader.

JET STARTS—Jet age has ushered in many new terms which may not as yet be familiar to many pilots and technicians. The following paragraphs define the various types of jet engine starts:—

Hot Start means that high temperatures are experienced in the tailpipe. This indicates uncontrolled burning, resulting from incorrect fuel mixtures. Hot starts are detrimental, therefore any indication of a hot start requires immediate stopping of the engine.

Wet Start is in actual fact no start at all. A wet start describes a condition where the engine is

turned up and the fuel is injected, but no ignition takes place. This results in the combustion chambers and the tailpipe becoming thoroughly saturated with raw fuel.

Dry Start also is not an actual start. When a wet start is experienced in a jet engine, it may be followed by a Dry Start. The purpose of the Dry Start is to dry out the ignition plugs, combustion chambers, and the tailpipes. This is accomplished by the normal turn-up of the engine but without adding fuel and ignition.

Hard Start describes a "rate" at which the compressor is accelerated from zero to idling. The harder the start the greater the energizing rate and the higher the torque on the starter and compressor shafts. Excessively hard starts result in sheared starter drive shafts. To reduce the undesirable effects of a Hard Start different methods are applied to control the power available to the starter—generally in stages.

Soft Start is the opposite of the Hard Start and describes a jet engine starting system which utilizes a gradual build-up of starter and engine compressor RPM. This imposes a minimum load on the starter drive shaft and the engine. Currently modified T-33 aircraft make provision for Soft Starting. Though modification to the aircraft is required, the actual control to provide a soft start is accomplished by the portable energizer (the APU) which must also be modified.

Air Start as the term indicates, pertains to relighting the engine in flight. As the aircraft moves through the air, air passing through the jet engine causes the compressor to autorotate. This windmilling of the engine drives the fuel pumps which produce the necessary pressure in the fuel system. It is obvious then that starter turning-up of the engine is not required. Ignition is the only other element that needs to be added to produce a relight.

Crash Start results when the power control relay contact points become welded together on the previous start. This allows full electrical power to be delivered to the starter. Crash starts invariably result in sheared starter drive shafts.

Hand Cranking is incorporated in some aircraft to provide a means of turning-up the engine by using a hand crank. After the required RPM is obtained, the Air Start switch is engaged to supply ignition and the fuel control is actuated to supply the fuel.—*RCN "Waveoff."*

Wheels Up Saves

Wheel Watch	Station	Aircraft	Date
Lightsy, F. A., FA) Taylor, R. D., EFAA)	NAAS Kingsville	S2F	nr*
Haptonstall, E. L., ACTAN Wilford, G.S., AMS3	NALF Crow's Landing	AD-4	8 Nov 1957
Malecki, G. J., ACT	NAS Glenview	F9F-6	22 Nov 1957
Richardson, J. R. L., AB3 Simmons, L. V., AN	NAAS Cabaniss	AD	19 Nov 1957
1/Lt. A. L. Sanders Cpl. J. H. Mason	MCAS Cherry Point	FJ	22 Nov 1957

* Not reported.

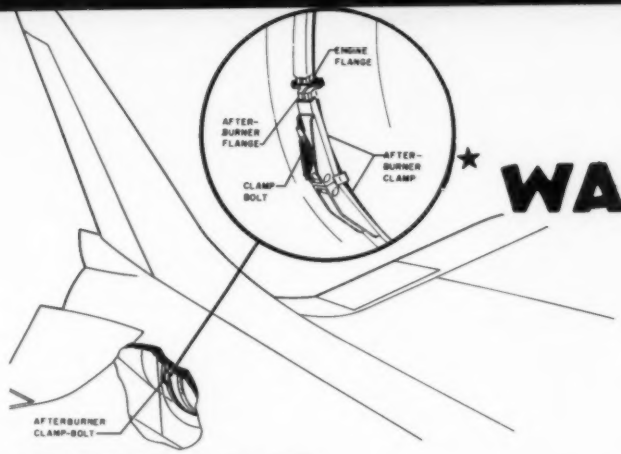
BOX SCORE

Wheels-up landing, unintentional, pilot induced

Jan 1957	1
Jan 1958	1

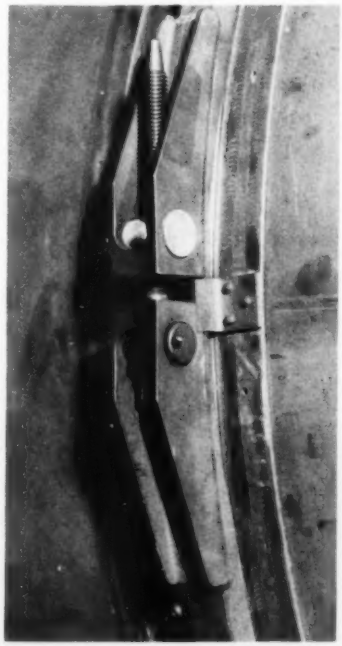
FROM A WHEELS-UP AAR:

"This accident would not have happened if the pilot had used the levers and indicators provided him to actuate and check the landing gear."



MURPHY'S LAW

★If an aircraft part can be installed incorrectly, someone will install it that way!



Wrong—Upper half of clamp is on backwards; no cutout for diffuser lug.

FOLLOWING an arrested landing, evidence of overheating was discovered in the dorsal area of an F4D-1. Investigation revealed the upper half of A/B clamp installed *backwards* allowing the clamp to slip half way off the diffuser and A/B mating flanges which caused aft end of the A/B to drop leaving a gap. This gap allowed hot exhaust gas to escape into engine section, blowing radiation shielding to shreds, overheating O-ring in elevon hydraulic yaw damper fittings, causing hydraulic fluid to leak on overheated areas and ignition to occur.

Here is a positive check procedure to insure that engine and afterburner flanges are clamped up properly. This procedure calls for crawling inside the afterburner, because the clamp halves, which secure the afterburner to the engine, cannot be checked visually from the outside due to close quarters in the engine bay. Gap tolerances less than .160-inch show that the clamp is engaging both flanges. This procedure is recommended each time the afterburner is installed on the engine.

1. When engine and afterburner have been installed, check cutouts at 3, 6, 9, and 12 o'clock positions to make sure that *slot is around lug.*

2. Make sure that the two butt joints of the Marman clamp are snug.

3. Get inside afterburner to check clamp position. Flanges make 45 degree chamfer which points toward rear. Take .160 feeler and try to insert all around flange. If it can be inserted the clamp is not installed properly. Relocate clamp to get proper installation. (See photo)

The tolerance of .160-inch maximum between engine and afterburner flanges was established to insure that the clamp had enclosed both flanges. *If safety lugs are installed it is not necessary to make the inspection.*

Right—Cutouts of both clamp sections fit around diffuser lugs of both sides.

The lugs are located 90 degrees from each other around the circumference of the clamp. If excessive gap exists when installing the clamp, the lugs will bridge across the engine and afterburner flanges preventing the clamp from fitting down. If the gap is wide enough to permit safety lugs to drop between the flanges it will be visible to personnel making the installation.

TIP TANK

MISCELLANEOUS AVIATION SAFETY TIPS . . .

Planning the Hop

We are always talking about properly planning your X-C flight. Have you ever considered "flying the hop" prior to the day of actual launch. The Training Aids Unit of MT&RG-20 has five jet basic trainers that will give you an excellent simulated flight. You not only get the en route work, but can get a climbout and a "practice" penetration at the destination. This can be the same penetration you will actually use.—2nd MAW

Red Face Saver

THE REGULATION setting up VIP codes is OpNav Inst 3722.8B and does not provide a code for a VIP requesting nothing. The code "N" which is sometimes used to request nothing actually means "Accord no honors, request an informal visit with the base commander."

In many instances the code "S" signifying "Accord no honors, provide servicing only" would be appropriate and might prevent some embarrassment.

Air Shipment of Dangerous Materials

AIR SHIPMENT of aircraft engines, tip tanks, generators, and vehicular equipment which contain fuel or other flammable liquids is an operational hazard. Flight vibrations can cause these liquids to leak out and spread volatile fumes throughout the aircraft. Since fuels contained in aircraft components normally have ultra sensitive flash points, an extremely hazardous condition is created in flight.

Equipment which contains fuel should be thoroughly drained, and when practicable, purged of dangerous vapors before movement by air.

Please Forward

IN THE midwest, one AACS squadron (Airways and Air Comunications Service) notes that a large number of communications searches were initiated for late aircraft. The reason: The pilots had failed to request CAA stations to forward their changes of ETA or destination on to Flight Service.

Tacan & Vortac

WHAT'S the difference between Tacan and Vortac?

Tacan: (Tactical Air Navigation). A pulse type omni range operating in the 1000 MC band, giving cockpit information and display of azimuth and distance from the facility similar to VOR/DME (distance measuring equipment). Its use requires Tacan Airborne Equipment and does not operate through the conventional VOR/DME equipment. Coverage similar to VOR/DME.

Vortac: A combination of VOR and Tacan. This facility consists of a coaxially co-located VHF omni range (VOR) and a UHF Tacan station. The identification for the VOR is transmitted at the rate of six identifications per minute. Twice each minute the VOR identification is omitted to allow two identifications of the Tacan signal.

'58 Weather

LONG-RANGE forecasters are predicting flyers will face more severe flying conditions during the next few months than any experienced in recent history. Observers noting correlation of unusual displays of sunspots to bad weather, say 1958 is the transitional year in the 33-year cycle of warm to cold weather change and will produce a large number of severe freak storms. *Aviation Week.*

OVERHEARD AT AN ACCIDENT INVESTIGATION

Describing his escape from an HSS ditching, a crewman said: "I have been lectured to, and also required to read the instruction on not leaving the aircraft until the rotor has stopped.

"But all this slipped my mind when the engine began to miss and the helicopter settled to the water."

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THANKS . . .

. . . . to NAS New Orleans Fire Chief Jack Scariano and his crash crew, for demonstrating how a piece of standard salvage equipment can also be pressed into service as an emergency rescue item.

NOLA's soft sod creates a major lifting problem each time an aircraft runs off the concrete, so Chief Scariano carries three portable air bags and a compressor in his pickup truck. Each bag will lift 12 tons. Four men can handle them with inflation taking only eight minutes.

Biggest rescue potential of the bags is in cases where persons are trapped in an inverted aircraft, as the cherry picker is quite likely to bog down. The bags' large bottom area keeps them on top.

Though NOLA has not yet had occasion to need the bags for emergency rescue, they have proven their usefulness three times by extricating mud-bogged commercial airliners at Moisant International.

The bags are shown in use, lifting a *Connie's* main gear out of the mud with minimum damage and delay. Stock number is R89B-27000, and the associated gasoline-driven blower is R89B-27500.

in this issue of approach

- **CAG:** You'll be interested in several of the 15 Letters this month.
- **Beechcrafters:** Please note what Touch & Whoa has to say.
- **Plane Captain:** Be sure to read A Case of Precedence.
- **Skipper:** You're concerned in A Case of Precedence, too. Don't miss Monitor, Letters, Dear John and the 11 Anymouse reports.
- **Storekeeper:** Since you are always in the middle, there's something interesting near the middle—see Headmouse.
- **Firefighters:** See From the Ground Up.
- **Tower People:** Letters has something of interest to you, and Monitor too.
- **'Copter Pilots:** Haven't forgotten you—see Wear and Tear.
- **Flight Surgeons:** Wear and Tear tells of interesting Flight Surgeon findings. Also Dear John, Anymouse and Truth and Consequences.
- **NAS CO's:** You and your Ops Officer may have the same answers as stated in Are We Near the Breaking Point?
- **Maintenance People:** From the Ground Up is for you; there's something special for F4D, T-28, A3D and R4D people, but *don't* miss A Case of Precedence.
- **Passenger, Pilot or Crewman:** There's always a chance that you may be down in the water and need a helicopter lift; Dear John—reading time, just 3½ minutes!
- **Pilots:** Cover to cover, with something special for FJ, TV and F8U drivers in Truth and Consequences. If you're filing IFR, there's no room for fudging—read One-Way Street.
- **Designers:** Check Murphy's Law—and the Letter re horns.
- **Vehicle Drivers:** Monitor has an item for you.
- **Para Rigger:** Take a look at the Letters, also Notes From the Flight Surgeon and Dear John.